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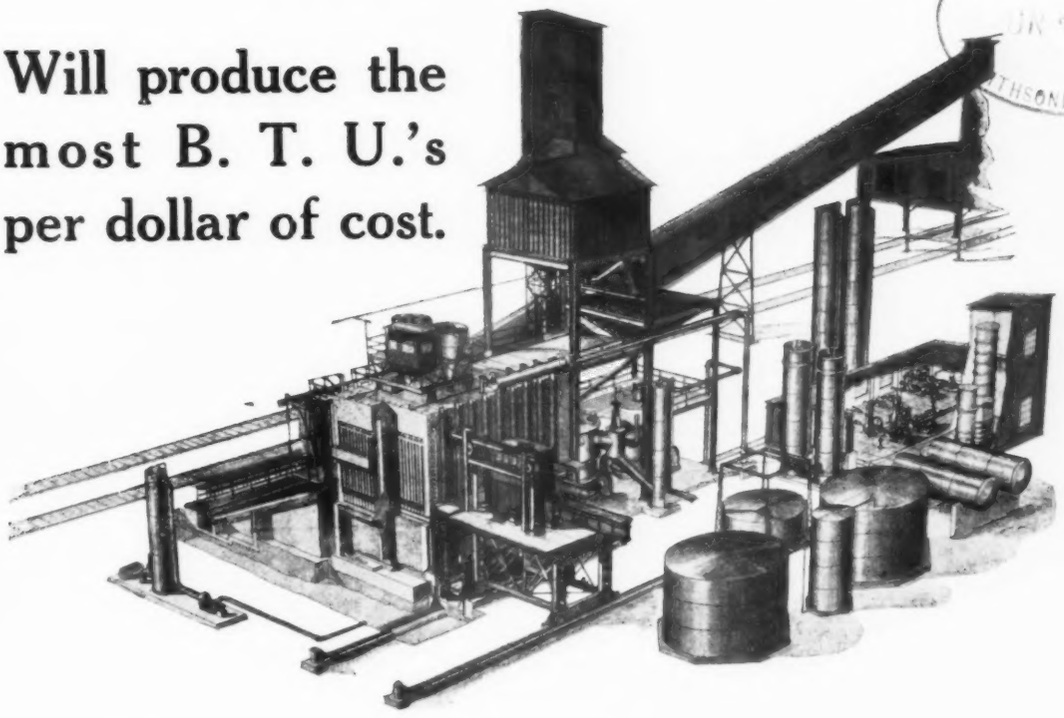

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Every Quality of Coal

May Be Successfully Carbonized in the

Glover-West Vertical Retort System

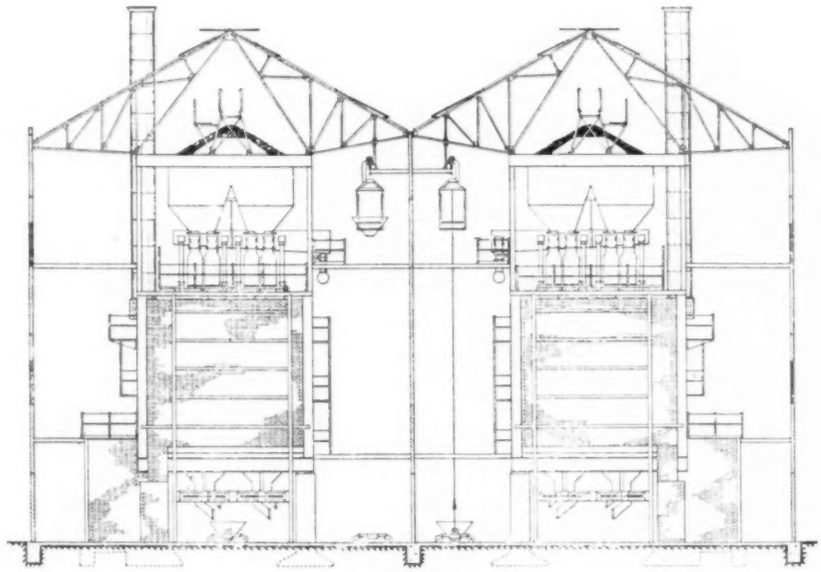

FIG. 4
CROSS SECTION OF A LARGE INSTALLATION WITH TELPHERAGE FOR COKE HANDLING

Plants from 60,000 cu. ft. Daily Capacity Upwards

7 Cities have plants of 5,000,000 cu. ft. capacity or over
29 Cities have plants of 500,000 cu. ft. capacity or less

117 Glover-West Plants in all, including 41 contracts since January, 1919

The West Gas Improvement Co. of America

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American Gas Journal
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Vol. CXIV, No. 25 NEW YORK, JUNE 18, 1921 Whole No. 3302

Gas By-Products As Chemical Raw Materials*

An Essential Factor in American Industrial Security and Progress

By R. S. McBRIDE

Engineer-Chemist, Washington, D. C.

Two hundred and forty million dollars was received by the artificial gas companies of the United States from the sale of gas and by-products during 1918, the last year for which figures are available. Of this tremendous business more than 25 per cent was done within the State of New York, and it is very fitting, therefore, that the gas engineers of this State should inquire into the meaning of these figures. They represent operations ten times as great as were found barely twenty years before; and if we add to the reports of these city gas plants the output of coke oven plants, an even greater total and greater percentage of increase are found. The gas and by-products from the coke ovens bring the total to $315,000,000; and if we include also the coke, the grand total is $700,000,000.

An analysis of this huge sum is of real concern to gas men, to the chemical industries and to the general public. Although the general public foots all of the bills, and profits by the wisdom or loses by the inadequacy of the plans which are made, their interest may for the present be ignored. This is quite proper, too, because any scheme which gives the gas man and the chemist the best results also serves the public best. It is fair, therefore, to study the subject solely as an industrial problem.

For the present, however, let us limit ourselves by considering only that portion of the industry which makes coal gas, carbureted water gas, and oil gas, taking to pieces this part of the business to see of what it is really made. The industry as measured by its gross income amounts to this:

Gas	$214,000,000
Coke	14,000,000
Light oils	7,000,000
Tar	3,500,000
Ammonia	1,500,000
Miscellaneous products	125,000
	$240,125,000

Fuel Processing, Rather than Coking or Gas Making

These figures for 1918 show us a total by-product income (for city gas works alone) of approximately $26,000,000, and yet the gas part of the industry is the only one ordinarily regarded as of importance. It is not alone the gas, nor the service which the gas company renders, nor even this plus the coke output of by-product and beehive ovens, which one should study, but rather it is the field of fuel treatment or fuels processing which deserves consideration to-day. To be sure, the coke affords over half of the value of products, and to the coke oven operator and metallurgist it is the dominating factor; and the gas and the utility service rendered are perhaps of first importance in the mind of the public, for this is the only part of the business with which the public really comes in contact. However, I take exception to the old-style nomenclature which would characterize the whole industry as either the gas business or the coke business. The larger title, "fuel processing," should be employed to show the larger scope and possibility which is before us industrially to-day. Approximately the grand total of $700,000,000, represented by the activities already referred to, is the annual income from this fuels processing in the United States.

Reasonable Ideals of Plant Performance

Since one is more interested in future possibilities than in past experiences in the form of dry figures, a bit of philosophical supposition is well worth while. However, let us be distinctly conservative in these imaginings. For example, it would not do for a moment to argue that all of the coal used in this country should be carbonized, or that all of the oil should be cracked. Furthermore, it is still far too early in our industrial development to assume that the entire supply of fuel for municipal activities, industrial and domestic, can be cared for through the existing or prospective gas distribution systems, great as they are or may become. Somewhat less rapid approach to idealism is more profitable for our present consideration. Therefore, taking only a moderate and rather feasible achievement as our goal and assume that all of the coal and the oil which is now being processed in our artificial gas works is to be so efficiently handled on the average that the products will be equal in quantity and value to those now actually obtained through the operations of the better 10 to 20 per cent of the gas companies. This is not such an extreme as one might at first think, for if only 23 per cent of our larger plants be brought up to such standards, we have cared for over 90 per cent of the output of the entire country; and, of course many of these larger plants already excel the rather modest "ideal" which we have set in this supposition.

*Paper read before Empire State Gas and Electric Association meeting

Potential Gas Output with Good Efficiencies

Consideration of the gas possibilities on such basis must include the products made from approximately 5,000,000 tons of bituminous coal used for coal-gas manufacture, about three and one-third million tons of anthracite and coke which with 700,000,000 gal. of oil is consumed by carbureted water gas production, and about 150,000,000 gal. of petroleum products used in oil gas making. These can well be expected to produce 257,000,000,000 cu. ft. of gas; and this at the rates of sale prevailing in 1918, 91 cents per thousand, represents an income of $243,000,000, or an increase of 13½ per cent above the income from the actual operations of that year.

This 13½ per cent increase, however fine it might be if realized, is nevertheless not very startling. Remember in this connection that the efficiency which has been assumed in this calculation is no better than that actually obtained by between 100 and 200 of the gas companies already operating. Indeed, one should not anticipate very startling results from such assumptions, for the operator of every gas works in the country is thinking first, last and all the time of gas. It would be too much to expect, therefore, that even the better 10 to 20 per cent would excel the general average by any tremendous total. Nevertheless, among those not reaching the superior standard which they should are many which fall far short of this; and, of course, 13 per cent would by no means represent the possible gain to them.

By-Product Possibilities

If one considers the by-product yields and possibilities, quite another situation is found. The gas works, be it large or small, is typically not like a factory or a large merchandising establishment in which every department is separately studied for costs, income, and profits. In the gas works the books are commonly kept with the price of gas as the only feature to be considered. If some of the other departments of the business lose money the deficit simply appears as one of the operating expenses chargeable to the gas. If there be a margin above cost, this is entered as an operating credit; and the foreman, superintendent and general manager join in a chorus of mutual and self praise as they report this achievement to the stockholders

And what is the inevitable results of all this? Naturally the departments thus neglected more often than not do lose money. How much they lose is of some interest, too.

Let us take the same coal and oil as is used nowadays and follow the theory that if 10 to 20 per cent of the companies can do it, the rest ought to learn how, also. The following income figures are the results for the conditions of 1918:

Gas	$20,000,000
Tar	10,000,000
Ammonia	2,000,000
Light oils	15,000,000
Miscellaneous products	1,000,000
	$48,000,000

The increase is seen to be from $26,000,000 to $48,000,000, or the substantial increase of $22,000,000, or 85 per cent of the present gross by-product income.

This is rather a radical, yet an altogether reasonable, improvement in business. However, lest some one attempts on the strength of this to float a new bond issue, or some public service commissioner hearing of these possibilities undertakes to fix gas rates on this new basis, I hasten to say that I do not soon expect any such impressive and favorable results either in New York or from the country as a whole. It would be too much to demand at an early date, yet no operator should fail to give careful thought to these possibilities.

Standards of Operating Performance

I do hope, particularly that some of these possibilities will be considered again when gas managers have before them the United States Geological Survey publication which is now being printed on "Artificial Gas in 1917 and 1918." In that report will be found tables to show the number of companies of each size obtaining various yields and efficiencies. With it each operator can study his own particular situation in comparison with the results of all others. Thus it may be possible to determine whether with size of plant, kind of gas, and other factors all considered, there may not still be some remedial measures needed in local operating practices. If one finds that his results are distinctly below those commonly had elsewhere, naturally it will be worth while both to investigate the reason why and, if possible, to discover the means for meeting or excelling the general performance.

The Broader Economic and Industrial Problem.

Fuel, like food, clothing and shelter, is essential to man as soon as he insists upon advancement beyond the status of a cave dweller of the stone age. In fact, at present fully 15 per cent of the expenditures made by the American people for all purposes goes directly or indirectly for fuel or power. Of this 15 per cent about one-fifth, that is about 3 per cent of the entire national expenditure, becomes part of the income of the gas and coking industries.

Moreover, at the present time the processing of fuels is of tremendous industrial significance because of the increased usefulness added to the fuel products by the processing to which the gas and coke ovens operator subjects his raw materials. Indeed, that service rendered by this industry to the community which should be regarded as of greatest general importance comes from the wide application and far-reaching benefit which is possible because of the diversity of products obtained.

Without coal products especially chemical industry would step backward decades, or even centuries. Indeed, modern comfort and safety would be practically impossible without the commodities which the processing of fuel makes available.

Of these benefits from coal products to industry and to human comfort, the more obvious are, of course, generally recognized. But there still remains to be learned from the war period another lesson about them which is much too often ignored. This lesson is found in the wonderful complexity which has developed through the inter-relation of industry. Obviously it will be well if we will bear in mind that there are a multitude of inter-rela-

tionships which cannot be thoughtlessly broken off without industrial consequences which no one can view with equanimity. Especially in the consideration of the industrial relationships of coal products should this principle be clearly recognized and the consequences accurately appraised.

Chemistry and Gas Engineering

The successful gas engineer is inevitably a chemical engineer of no mean ability. Whether he recognizes this fact or not is of secondary importance, for in his success as a gas operator he will have applied chemical control and observed the principles of chemical science else he would not have succeeded. As a matter of fact, it is perhaps not too much to say that gas engineering is fundamentally chemical engineering. In other words, it is a part of that industrial profession in which should be blended all the science of chemistry and the best possible technology of the mechanical engineer. Indeed, without the best of each of these two professions, the maximum of success cannot be obtained in the control of the most complex industrial chemical operation that has thus far been successfully undertaken by any branch of science or technology, namely, the carbonization of coal and the cracking of oil—fuel processing.

Because of their close professional relationship, the chemist and the gas engineer find much in common. Indeed, their work together can properly become a most intimate co-operation, for both professionally and industrially each has much to offer to the other.

Without continued advances in chemistry the art of gas making will not progress. Without the products which are derived during gas manufacture, the chemist is helpless in the industrial advancement of many fields in which he is recognized as chief. Moreover, without the chemical markets for his by-products, the gas and coke oven operator would rapidly drop back to the antiquated systems of a former century; modern processes, demanding as they do tremendous investments relative to the value of the gas produced, are wholly uneconomic unless supported to the very maximum of by-product income.

In considering his relationship with the chemist, the gas engineer will do well, therefore, to think of him both as a professional and as an industrial co-operator.

Some Problems of Co-operation

Even though we may have established the fact that the chemist and the gas engineer are to co-operate extensively, there still remain important problems. It is quite evident that the engineer will furnish coke for metallurgical and foundry use, that ammonia for fertilizers, explosives, dyes, and refrigeration will be supplied in part by his activities, and that tar, light oil, naphthalene and carbon will contribute to their respective chemical industries. It is not worth while to recite again the multitude of uses for all of these products. Tar will continue to be used for road making, roofing, paints, wood treatment and waterproofing, insulating materials, briquet binders, and a multitude of other uses, in addition to the automotive and Diesel engine-fuel filed which can be counted upon to absorb any surplus that the chemical industries may leave. And, of course, the products of light oil and tar distillation are the fundamental raw materials from which we get dyes, pharmaceuticals, photographic chemicals, synthetic perfumes, explosives, food preservatives, solvents, and a multitude of other chemicals and even denaturants for our industrial alcohol.

The problem is not to discover theoretical means for thus applying the fuel products, nor even to develop chemical technology so that it may efficiently process these coal products to the point of sale for their many and divers uses. The problem is rather a commercial and economic one. It has two phases. First, how can the coal products be made much cheaper? Second, how can the commercial development of the industries using these products be insured? The first of these questions must be answered mainly by the fuels engineer. The second principally by the chemist. However, unless both are satisfactorily answered, neither the chemist nor the gas engineer can be content.

The Engineer's Problem

There is by no means unanimous agreement upon any solution of the problem which confronts the gas engineer, namely, how can the coal products be most economically produced? Indeed, it is doubtful whether any single process is at all suited to the wide variety of conditions which must be met. Complete gasification of coal will doubtless do much to advance the art of coal treatment in localities where the disposal of coke is not easily accomplished. Low-temperature carbonization affords equally promising possibilities for the future, through the supply of larger percentages of the fuel in the form of light oil and particularly valuable tar. The briquetting of fuels to afford an altogether satisfactory anthracite substitute also must receive due consideration in many parts of the country. In all of these cases, however, and in a multitude of other proposals which will occur to any well-informed gas engineer, it is improved technology and complete recovery of the most valuable products toward which we must strive. In other words, the factory system of many departments, each carefully studied for cost and profit, must be observed.

Some other proposals have been made which are rather commercial than technical in their significance. These include the co-operative systems of marketing and the centralization of gas manufacture or the establishment of "super-gas" stations. Doubtless, too, these economies of management will also largely contribute to the success which the engineer seeks from a technical point of view. Certainly all of them are worthy of study from the standpoint of making more readily available the improved processes which have little prospect of early success in small units or under difficult commercial conditions.

However, with all of the improved technology and with even the best of management the gas industry still finds that efficiency may in part defeat its own ends. If all of the gas and coking plants of the country were managed as well as the best, a new phase of the problem would probably arise, namely, an inadequate market for the products. It takes but a small percentage excess of production above demand to produce tremendous reduction in market price. Such competitive conditions of sale force the market price down to actual cost or even below for commod-

(*Continued on page* 541.)

Holds Gas Rate Increase Necessary

Expert Reports in Georgia Railway & Power Company

Conditions faced by the Georgia Railway & Power Company in operating its gas plant in Atlanta demanded the action taken by the State Railroad Commission a few months ago in increasing its gas rate from $1.45 to $1.90 a thousand cubic feet, according to the report made to the commission by Professor Henry E. Riggs, of the University of Michigan, following his examination of the properties of the company. Extracts from the report in the form of a digest were made public recently by the power company in a statement issued by President Arkwright.

In his report, which covered fifty-one typewritten pages, Professor Riggs goes into the case exhaustively, sets forth in the charts the basis of his finding, gives his views on valuations of the properties, fixes a valuation and reviews the inclusion of operating charges as one of the bases for rate making.

Professor Riggs said the company has lost money during recent years and declared he thought the rate of $1.90 was not excessive. He declared a reduction from the $1.90 rate could come possibly through the reduction in freight rates on gas oil and coal.

All Facilities for Work

Professor Riggs was quoted in the statement as having said he was afforded every facility for examining the statistical and accounting reports of the company and all of the valuation reports made for the company by W. A. Baehr and A. J. Luick, of Chicago. He said he had been given access to all information placed before the Railroad Commission during the rate hearings and had been given much data which have not been placed in evidence heretofore.

Professor Riggs said an inventory of the property was made two years ago as of Jan. 1, 1919, and that this was undoubtedly accurate at the time it was made. A new inventory made now, he asserted, would disclose some abandonments and some replacements and some changes of property, but no material change in figures would result from such an inventory over those based on the two-year-old inventory plus net additions to the plant. He said Mr. Baehr and Mr. Luick used 20 per cent overhead as against the varying overheads he used, which averaged 17 per cent.

"These detailed physical inventories and the estimates as of various dates made by Mr. Baehr and Mr. Luick form a correct basis for making computations required in this case. I am satisfied that no material difference in figures would result if your commission placed a force of men on an investigation that lasted several months," Professor Riggs declared in his report.

Discussing a valuation of the properties, Professor Riggs continued:

Valuation Fair Basis

"To the writer it would appear to be fair to use a valuation that would fully represent that part of the total investment which is actually in use furnishing service to the public and to adjust the rate of return to meet the varying business conditions of the country. In this way investment made to meet the expansion of business in a community under stress of war-time conditions such as we have passed through, would receive full recognition, and if the rate of return be at all times fixed at such a figure as would enable the company to attract new money needed to make extensions to permit it to keep up with the growth of the community, full justice would be done.

"It seems to me that we cannot get away from the fundamental truths. First, that our present-day civilization must have the services rendered by these utilities; second, that we can build them with the money of the taxpayers or as private enterprise; third, that if they are to render satisfactory service they must grow just as fast as the community they serve, and that means constantly increasing investment; and, fourth, that if private capital is to go into regulated utilities, there must be the reasonable assurance of a fair rate of return on the investment and a repayment of the money invested or the guarantee of the integrity of the investment through proper allowance for replacement of property when it is worn out.

"The courts have so clearly defined this latter requirement that no argument is necessary."

Value $7,512,000

Professor Riggs fixed the present valuation of the property of the company in Atlanta and Decatur at $5,299,435 less depreciation, this being the reproduction value. A fair value of the properties if fixed along court procedure based on the evidence in the case would be $7,512,293, according to Professor Riggs. This valuation being as of Jan. 1, 1921.

In making his investigation in Atlanta Professor Riggs said he had not limited his work to consideration of valuation figures but had given much time to consideration of cost of manufacture and other operating expenses. He said the gas plant in Atlanta has had exactly the same experience as all other gas properties in the country have had since May or June, 1917. Conditions since that time have been probably the worst in the history of the industry, according to Professor Riggs.

"The problem is not one of finding a set of rates that will pay large profits to the owners of the property," he said. "It is to fix such rates as will enable them to find enough new capital to build the additions to the plant which are needed to meet the wonderful growth and development of your city. There is more real, visible development here in Atlanta now than in any other city of which I have knowledge.

Needs Service

"That Atlanta needs the service is evidenced by the growth of the business and the increased output

of gas year after year. Ample gas and ample electric power are a great asset to the community and the possession of the facilities that exist here add tremendously to the prestige of the city as a desirable manufacturing center," Professor Riggs said.

"A careful study of the data submitted will conclusively prove that the condition facing the company demanded the action taken by your commission and that only by the continuance of such an adequate rate as your commission sees fit to prescribe for a sufficient period to make sure that conditions as to coal and oil prices are stable, and to permit the company to dispose of the stock which it has laid in, and properly so, at a time of high prices, can the company hope to maintain its credit.

"My only interest is to present the facts to you. The company has been operating for many months at a loss, not only in not receiving an adequate return, but no return at all, and for much of the time not earning any depreciation.

Raise Not Sufficient

"The increases granted by the commission up to February, 1921, were not sufficient to permit enough earnings to show a fair return on what appears to me to be the minimum valuation that could possibly be taken as a reasonable value. Indeed, in 1920 the company failed to earn a proper amount for replacement to offset the depreciation of the year by $57,494, without considering any return at all.

"The showing compels the conclusion that during the years of high prices and great prosperity and growth in the South, the Atlanta gas property had no share in the general prosperity, and was handicapped in making the necessary extensions to meet the demands made upon it. Any letting up in quality of service is explained by the showing. This general state of affairs is true largely of the gas industry throughout the United States, and is by no means a local condition in Atlanta.

Conclusions on Rate

"In discussing the whole subject of costs of manufacturing gas and of earnings, I have attempted to so analyze the statistics of the Atlanta gas property as to enable you to arrive at conclusions which are based on pretty full knowledge of all of the facts.

"During the five years from 1912 to 1916, inclusive, business was normal, and the property earned a little better than 7 per cent on its then value.

"From early in 1917 to the present time the gas business throughout the country has been ruinously bad. Costs of material have risen and fallen, and risen to heights deemed impossible a few months ago. During these four years the Atlanta company not only failed to make a profit, but earnings were below a fair return by well on to a million dollars.

"Two previous rate increases failed to give the company enough to meet expenses and replacements to offset depreciation. The third increase, to a net maximum of $1.90, is questioned.

"If we were limiting our consideration to the evidence as to business in the last eight months, the answer would be that a net maximum rate of $1.90 on which the company will probably secure an average income per thousand feet of gas sold of about $1.83 to $1.84 is not enough. To continue business under conditions predicated on those months, I should say that a net rate of in excess of $2 would be necessary.

"When we consider the entire four-year period, and especially when we examine the history of price fluctuations following all other wars, I believe that we are amply justified in thinking that our business conditions in the United States will assume something like a normal condition, and that we may expect a stabilization on something approximating present-day prices.

"On such an assumption I think the present rate is enough, but I do not think it excessive.

"Nor do I think it will give an excessive return on the commission's valuation, which is, I think, the extreme minimum to represent actual investment, but which is not open to the objection of being too low to be in reason.

"If freight rates on coal and oil are reduced, the present rate can be lowered.

"If business conditions return to an approximation of conditions of 1918 and 1919 in the next few months, the present rate can be lowered.

"Just at present, I do not think the commission should recede from its order. Any change should, I think, be based on average costs over a period of three or four months, and such average now does not justify any decrease."

City and County of Denver vs. Denver Gas Co.

Mention has been made in a previous article that the law in Denver, Col., requires the Denver Gas & Electric Light Company to pay to the city and county of Denver all money charged consumers in excess of 75 cents per 1,000 cu. ft., and it was also stated that the gas company refused to accept any new and large consumers, due to what the gas company claim is an inadequate compensation.

Now comes City Auditor Stackhouse with a report showing that the gas company owes the city and county of Denver the sum of $597,024.30, for excess rates collected during the past three years.

The excess in 1918 amounted to $90,000, but as the gas company did not pay it, City Attorney James A. Marsh started suit against the company, and the suit is still pending. In 1919 the excess rate collected amounted to $242,977.57 and in 1920 the city should have collected $264,046.73 on account of the excess gas rates charged. Some time since Auditor Stackhouse wrote W. J. Barker, vice-president and general manager of the gas company, giving him the exact amount of the indebtedness, to which he received an answer, contention being made that the gas company was only indebted to the city and county an amount of $385,903.64, for excess rates. Of this amount $183,591.20 was for 1919 and $202,312.44 for 1920.

The difference between the figures of Stackhouse and Barker is said to be due to bills that the gas company are unable to collect, and gossip has it that General Manager Barker says the company would not pay a cent of the $597,023, which the city claims is due it, until the courts decide the $90,000 collection suit now pending for the city.

Barker has challenged the city administration to run the gas and electric plant and make a profit, the claim being made that under present rates they are allowed to charge, neither the gas nor electric departments can make a profit.

New England Association Hears Sales Talk

Sales Organization Holds Annual Meeting

The annual meeting of the Gas Sales Association of New England was held in Boston, May 13. The report of the governor and board of managers was read and accepted, as was the report of the auditing committee made by J. H. Sumner of the Cambridge Gas Light Company, the report of the nominating committee was presented by William Gould.

H. J. Long, president of the Kompak Company, and chairman of the merchandising committee of the American Gas Association, gave a most interesting man-to-man talk. His subject was "Gas Water Heaters — When and Where They Should Be Used."

Usually we try to confine most of our articles on merchandising to the first issue of the month. But here is an address and the subsequent discussion that positively calls for immediate publication. It's mighty timely.—Editor.

Mr. Long said in part:

"It is just seventeen years that I first handled water heaters, and during these years my associations with all of New England have been more pleasant than anywhere in the United States.

"I do not believe the gas men in the country realize the importance of the water heater business to the gas industry.

"To-day there is practically a water heater for every need.

"There is no one in the business to-day who should have as personal an interest in installing water heaters as the gas company representatives. If we can get you to realize the possibilities, it will be a tremendous thing for the gas industry as a whole.

It is my belief that the gas man stands as high in the point of efficient management in his business, as any like business in the country.

"I want to try to make constructive suggestions. It is not the plan of sales that counts: it is how the plan is carried out. It is the energy that you put behind it that is going to make success.

"One of the essential factors in the sale of water heaters, is the knowledge of the business. Salesmanship is 75 per cent knowledge of what you are selling.

"The water heater business is a technical proposition. The water heater is a plumbing appliance as well as a gas appliance, and as such requires a special knowledge of plumbing and water connections.

"A man must train to sell water heaters. Many of you have seen cases, where trained salesmen on water heaters have gone into a town and done a very large business, where other salesmen who have not specialized have not accomplished nearly as much.

"One of the prime requisites is a thorough knowledge of water heaters as they are on the market to-day, and with the competition you must meet, you can then intelligently put across your sale.

"We use the word 'service' a great deal. Many of us don't realize the meaning of the word 'service.'

"Real service is offering for sale the best article for the needs of the customer. The house which renders the best service is the one that gives you the best article for your requirements.

"There is one point that is in our favor. In manufacturing, selling or installing water heaters, we are fulfilling an inherited need from the very earliest times."

At this point Mr. Long gave a short history of the use of water for bathing from the beginning down to the present time.

"Water is important to every house. Probably every house that is built to-day will have running water in it. Think of the thousands of dollars that are spent by the big cities to bring fresh, clear running water to the faucets, and here we have a wonderful appliance with which we can convert that cold water to hot as required.

Possibilities Are Tremendous

"The possibilities of the business are tremendous, and we must realize what a service we are rendering to the housewife in the home.

"We can't sell anything unless we know what we have to compete with. If we know the whole story we can intelligently sell our product.

"Learn all about other methods of heating water, efficiencies, fuel requirements, installation costs, operating costs and compare service rendered.

"The big, broad field among a certain class of houses is the tank water heater business.

"There are a lot of different tank water heaters on the market. The tank water heater business is without doubt a very fine thing. The only thing we gas men should do is to analyze our customer pretty well, and be sure we can't put something better in his home. It is too easy for the salesman to sell a tank water heater, when by a little sales effort, he

could sell the customer a heater which would give better service and a continuous flow of hot water.

"The tank water heater is a good thing, but it is only half the proposition. We are only giving them the hot water when they take the time to light the heater, but for the thousands of uses for hot water in the home, the tank water heater is only a makeshift, only put the tank water heater in where you can get it in the kitchen. Unless it is put in the kitchen the tank water heater can be a detriment to you. Be very careful when you do make a sale that there is not something better than would give the service required.

"That brings us to the automatic heaters.

"Automatic hot water service is the ideal to which we are all looking. There are two kinds, automatic-storage and instantaneous."

Mr. Long described the difference between storage and instantaneous heaters and told where each should be used.

"There are two kinds of companies. One, the smaller property where the salesman is the manager, and the other property is where the manager has been out selling goods.

"Knowledge is essential for the proper sale of water heaters.

"What are you doing to educate these men of yours?

"What are you doing as salesmanagers to pass this information along to your men? Are you holding meetings? Why not call your men together and give them a water-heater talk? It is really not what you are going to take home that is important, but what you can pass along to someone else.

"I would like to feel that I have been able to inspire at least some of you men with the possibilities of the sale of automatic water heaters. I would like to feel that you men are going back to your store with a determined effort to sell water heaters. Look around your store and a majority of you will find that there is little effort being made to sell water heaters.

"How many of you men are merchandising your water heaters, putting them out front where your customers will see them? Have something of interest to show them.

Making a Sale

"I know one gas company where they have connected a water heater in the front part of their store. One day a man came in to pay a bill, with no intention to purchase a water heater, but before he left he deposited a check as part payment for the heater. Put the heater up front; give it a good display. Don't put it in the corner where no one will see it without asking especially for it. Most every family can make use of a water heater in their home."

The Points of the Discussion

Burton Smart, president of the New England Association of Gas Engineers, declared "You must sell gas water service. We have a very high gas rate in Portland, Me., $1.85 net, and yesterday one of our customers called me up and asked me when the rates were going down. He said, 'I can't afford to pay $18 or $20 a month for my gas bill. You will have to take the water heater out.' After talking with him for about five minutes I sold him the idea of hot water service and he was perfectly satisfied. We had a very nice talk, and I felt very much gratified that I was able to sell him the hot water service, and that he was going to keep the heater. We must sell service. Gas is only in its infancy in the home."

Mr. Woodhead, salesmanager of the Arlington Gas Light Company, said:

"The important point that Mr. Long brought out is the selling of service. I think we will all agree that, in the installation of water heaters, it is not simply putting a water heater in the house, it is a study of the needs of the customer. The proposition of merchandising water heaters is very interesting. When Mr. Gould proposed the idea of interesting the plumbers in our territories to co-operate with the gas companies, that was a step towards adding salesmen to our companies without expense.

"We recently had a meeting of all the plumbers with a view of getting together and finding out just how we could co-operate for the increased sales of gas appliances, particularly water heaters. It was very interesting to hear the arguments advanced. The plumbers have some peculiar ideas. To follow some of the installations by the plumbers would require a great deal of educational work."

J. C. D. Clark, Boston Consolidated Gas Company:

"We must explain to the customer the advantages of the water heater. Get your customer interested in the water heater, show him the service the heater will give him, then he won't kick about the gas bills. We should give the heater attention. Twice a year the heater should be inspected without charge to the customer, except for new parts. Give service and sell service."

John S. Fox, salesmanager, Springfield Gas Light Company.

"The remark made about giving the water heaters a proper display is a most important and timely one. You will find that in the majority of stores the water heater display takes up the least space, for the amount of business done, of any articles carried. The idea of putting water heaters where they can be seen is important and should be given thought."

Mr. Wilbur, Brockton Gas Light Company:

"We are putting on a campaign this week on automatic water heaters. This year while it is going a little bit slow, we feel that our sale will be a success, and worth the effort and time we have put into it. We have between six and seven hundred automatic water heaters on our lines and they are all satisfied customers. We have about 22,000 meters."

"We have been very successful in selling automatic water heaters," said Mr. Hilton, of the Fall River Gas Company," and we attribute this to the fact that we see that the heater is installed properly and we keep the maintenance up. We have a maintenance department and they inspect the heaters on our lines twice each year and this is done without any expense to the customer.

"We have about 1,800 heaters on our lines and a total of 22,000 meters. We have made quite a number of large installations. We have put across an installation of eighty heaters in one manufacturing concern. We expect to get an order for a duplicate installation soon."

"We have just completed a tank water heater sale," said Mr. Quinn, of the Quincy Gas Light Company.

"Seventy-five cents down was the selling point. We sold 275 heaters in five or six weeks. We feel that at this time it is necessary to make some concessions. We plan to do the same thing with some other appliance in the near future. If we get the heater in and look after it we won't have much trouble. We have about 12,000 meters. In this sale about 10 per cent paid the cash price and the rest took the time payments. When we send out the bills, we add a line stating that if the bill is paid within thirty days the net price will be 5 per cent less than the sale price."

M. B. Webber brought up the question of installing some other kind of a heater which would be better for the customer's needs.

Mr. Quinn stated that sometimes a tank heater would be installed where it would have been just as easy to install an automatic. After the customer has the tank heater in for about a month his company sends a letter stating that they have a better and more satisfactory service and they will rebate them for the full amount of the tank water heater, if they will purchase an automatic heater.

"Several men have given the idea," declared Mr. Fancy, Newton & Watertown Gas Light Company, "that after the water heater is sold service should be sold to the customer. Men should be instructed to talk this service to customers; tell the customers what they are getting for their money. I think we should carry this home to the man who complains about his high bills."

Said Mr. Abbott, general salesmanager, Weir Stove Company:

"The fundamental principle of the whole thing is to educate the public before the high bills come. There are a lot of people in New England who are waiting to have water heaters sold them, but we don't get after them just right. I think if I was in the water heater business I would give the customer facts, and I think that would go a long way towards molding the public opinion in the right direction towards water heaters."

Mr. Gould, commercial manager, Gas & Electric Improvement Company, brought out the importance of co-operating with the plumbers and gave in detail their hopes, plans and results to date.

"I am not in favor of a tank water heater campaign," said Mr. Long in closing the discussion. "I am in favor of concentrated effort in selling hot water service, and trying to put in what is best for the customer's needs. I agree that many a good prospect has been spoiled by putting in a tank water heater.

"It seems to me that in running a water heater campaign you have two propositions for your men to sell, rather than to merely get across the installation of a small heater.

"The campaign demonstates to my mind that you have a big field for water heaters. Many gas men are too well satisfied.

"Don't let the campaign idea slow up your sales, and when you make a few sales don't sit back in your chair and think you have done a dandy business. The water heater is something that will sell the year around. Let your campaign stimulate sales; use it to stimulate your own salesman and try and make them continue with the work throughout the year. Yes, it requires a considerable sales effort to put the heater across twelve months in the year."

Examination Papers in Gas Engineering

Inasmuch as every one has a set of questions these days the AMERICAN GAS JOURNAL believes there will be real interest in the following dispatch from London. The message is self-explanatory:

London, England.—This years examinations in gas engineering of the City and Guilds of London Institute were held on April 23, at various centers. Two papers were set—grade I and final—and four hours were allowed for each paper. Ten questions were set in each grade, but only eight were to be attempted. The number of possible marks for each question is given in parentheses. The examinations were prepared by S. Tagg, gas engineer to the Preston Gas Company, who has now undertaken the duties of examiner in gas engineering, in succession to Samuel Glover, of St. Helens, who had acted as examiner for a number of years.

Grade I

1. What are the principles underlying the construction of a regenerative setting of horizontal retorts? (45.)

2. Give a cross-sectional sketch of a hydraulic main, showing gas and tar connections. (40.)

3. What conditions are responsible for the stoppage of ascension pipes? (35.)

4. Describe the construction of any type of plant for the manufacture of water gas with which you are familiar. (45.)

5. Describe the arrangement of plant for the complete condensation of tar and liquor. (40.)

6. Describe the construction and the method of working of purifiers for the removal of sulphureted hydrogen. (45.)

7. Give a description of the apparatus required and the method employed for the determination of the calorific value of gas. (35.)

8. Describe, with the aid of sketches, the construction of a station governor. (35.)

9. Discuss the relative merits of dry and wet gas meters. (35.)

10. Describe the construction of an inverted gas burner, and state why higher efficiencies can be obtained by increasing the pressure of gas. (35.)

Final

1. Give a cross-sectional sketch of a regenerative setting of horizontal retorts, not necessarily to scale, but with the principal dimensions figured, and any explanatory notes that may be required. (45.)

2. Describe in detail the operation of heating up a bed of vertical retorts from cold, and the method of regulating the heat whilst in use. (40.)

3. Describe the physical and chemical changes occurring during the process of carbonizing a bituminous coal in horizontal retorts at high temperatures, giving the composition of the products evolved at successive intervals during the charge. (45.)

4. Give a description of a machine for charging

(*Continued on page 545.*)

How Can We Increase Our Water Gas Set Capacities?*

Discussion of the Problem Now Before Many Managers

By J. HAWLEY TAUSSIG, Philadelphia

The problem of meeting increased sendout is now before many gas managers whose companies are not in a position to finance larger apparatus at this time, and who must make the most of their existing apparatus with the least expenditure. It is primarily for this situation that this paper is being written, but it is also for those who have the money to increase their capacities and who want to do it in the best and most economical way.

There are certain fundamentals that affect the capacity of water gas sets, among which are:

1. Area of grate.
2. Rate of blast.
3. Rate of steaming.
4. Character of fuel.
5. Facilities for cleaning fires.
6. Facilities for operating valves.
7. Facilities for coaling.
8. Resistance to gas make.

Area of Grate

The area of grate is, as a rule, fixed by the size of the generator. There are cases, however, where the linings can be cut down in thickness without detriment to the apparatus, and thus a small amount of additional grate can be obtained. In some case, where a new generator is to be installed to old carbureter and superheater, it is wise to install a larger size generator, in order to get increased grate area.

Rate of Blast

By rate of blast we mean the quantity of air per minute actually going through the generator. This quantity depends upon the following:

Capacity of blower, both for pressure and volume.
Size of blast pipe.
Size of connections of apparatus.
Spacing of checker brick.
Quality and condition of checker brick.

In addition to the above, the character of the fuel and frequent and thorough cleaning are important items in the rate of blast. These are spoken of under items 4 and 5.

Capacity of Blower, Both for Pressure and Volume

The first thing to do is to equip your plant with a blower that will give both sufficient volume and pressure to meet conditions. In order to assist those who are considering the installation of a blower, a table is given below which gives the quantity of air required per minute for modern sets of various sizes; gives brake horsepower required and the actual steam and electricity required, assuming, in the case of the steam-driven unit, that the blower is slowed down at every run and very little steam used during the run. In the case of the electric-driven unit, it is assumed that the unit will be run at full speed at all times.

Table Showing Steam and Electric Power Required for Blowing One Modern Water Gas Set

Size of Set	Rated Capacity M. Per Day	Blower: Air Required Cu. Ft. Per Min.	Blower: Pressure Inches of H_2O	Blower: Brake H.P. Per Hr. Required	Steam: Water Rate of Turbine	Steam: Boiler H.P. Per Hour	Steam: Steam Per Day—Lbs.	Electric: K.W. Hours K.W. Per Hour *	Electric: K.W. Hours K.W. Per Day
4 ft. 0 in.	210	1,300	36	13	73 lb.	12	9,000	11	230
5 0	480	2,900	36	25	66	20	15,000	18	390
6 0	810	4,900	36	42	65	33	24,000	29	610
7 6	1,470	8,800	36	72	56	49	35,000	43	900
8 6	2,020	12,100	36	99	53	58	42,000	51	1,070
9 0	2,320	13,900	36	114	52	72	52,000	63	1,320
10 0	3,120	18,700	42	177	51	109	79,000	96	2,020
11 0	3,500	21,000	42	200	45	109	79,000	96	2,020
12 0	4,320	25,900	42	246	45	134	97,000	118	2,480

*Note.—Should it be found practical to slow down the electric-driven unit during the run, the power required would be two-thirds of that shown in the above, when slowed down.

One can readily figure from the above table, whether he would want an electric or steam driven unit, as much depends upon whether there is sufficient boiler capacity in the plant and also as to the cost of electric power.

Attention is, however, called to the fact that by blowing at higher pressures, considerable additional steam per minute will be required for blowing the apparatus. It does not necessarily mean however, that there will be more steam used per thousand feet of gas made.

*Paper read at Southern Gas Association convention.

Size of Blast Pipe

It is, of course, necessary to have sufficient size of blast pipe in order to conduct the air to the sets without undue loss of pressure. It is also well to be careful to avoid sharp turns in the blast pipe. Area of blast pipe leaving blower is preferably not less than 10 per cent of grate area.

Size of Connections of Apparatus

Small connections between generator and carbureter and superheater, and at the stack are responsible for a considerable amount of resistance to the blast. The connection between the generator and carbureter would be the first to be enlarged. First, on account of the size, and secondly, because the old type of sets does not have a dust catcher between the generator and carbureter, and this is of the greatest importance for sets operating at high capacity.

When a set is being blasted at a high rate, more or less fuel is blown into the outlet connection of the generator, and unless it is caught before it enters the carbureter, it would soon plug up the carbureter. To install an angular dust catcher between the carbureter and superheater requires the installation of an entirely new reserve steam connection.

The connection between the carbureter and superheater should be the last to be enlarged, because it is difficult to make, and as a rule, involves the entire relining of both carbureter and superheater. The resistance in this connection is often overlooked, though it frequently causes loss in capacity.

A small stack can cause considerable resistance to the blast, and it is recommended, where any remodeling is done at all, that this resistance be reduced to one inch or less, as it can easily be accomplished.

Spacing of Checker Brick

Owing to the tendency of carbon and dust to collect on the checker brick, in the carbureter, it is well to space the first six to eight rows about 4½ in. apart. It is recommended that the remainder of the carbureter be spaced about 3½ in. apart. The superheater can be spaced as usual, about 2½ in. apart.

Quality and Condition of Checker Brick

It is important to have the brick, especially on the top of the carbureter, of a quality that will not easily disintegrate by the coaling effect of the oil. The best brick for this class of work is a re-pressed flint clay brick with a large grog.

A poor brick in the carbureter will disintegrate rapidly and form a mat over the top surface of the carbureter. This is one cause of considerable resistance to the air blast.

Coke from the oil and dust from the generator also accumulate on the top of the checker brick. For this reason, when the resistance in the carbureter becomes high, the carbureter should be cleaned.

Rate of Steaming

Steam pipes to generator should be of ample size to admit the maximum rate of steam required for the increased capacity. Very often small size steam pipes are responsible for long-drawn-out runs, in which case much time is lost. A steam separator should always be placed in the line near the set, in order to prevent entrained water from entering the set. A steam meter is useful in determining the proper amount of steam to use.

Character of Fuel

In addition to the size and weight of fuel, the quantity and quality of ash have an important influence on the capacity of a water gas set. Generally speaking, fuel with a high fluxing ash is desirable. For instance, anthracite coal has usually a softer clinker than a coke clinker, because it is more refractory. However, with modern equipment many fuels with low fluxing ashes can be readily handled and the fires cleaned in a short time as with anthracite coal.

A fuel having a high percentage of ash requires more frequent cleanings than one having low percentage of ash, and this means loss of time in operation.

The size and weight of fuel is important in affecting the quantity of blast passing through the fires. An even sized fuel, containing lumps from 3 in to 4 in. in size, is desirable for high capacities. Where a smaller fuel is mixed with a larger fuel, the smaller fuel has a tendency to do one or two things. If well distributed in the fire, it will fill up the voids between the large lumps and thus cause additional resistance, or if it is poorly distributed and allowed to fall directly on to the fire, it will form a dead center in the fire and cause most of the blast to pass around the periphery. In any case, it is best to screen the dust from the fuel before it is charged into the generator.

The weight of the fuel also regulates, to some extent, the rate of air that can be blown through a fuel bed, if the fuel is very light, much of it will blow out of the generator, therefore it is desirable to have a heavy fuel for high capacities.

Facilities for Cleaning Fires

It is necessary, in order to get high capacities, as a rule, to clean frequently and thoroughly. With coke fires it is recommended six to eight hours between cleanings as the best periods. With anthracite coal, this time can be extended in sets which have a deep fuel bed. In general, however, it will pay to clean every eight hours.

With coke having a low fusing point in ash, methods have been devised for handling this type of clinker. The best of these is the hold-up bar system. Large doors are provided on both sides of the generator. The set is operated to melt the clinker into a slab on the grate. The hold-up bars are then pushed over the clinker and supported on the doors. These bars cover the entire inside area of the generator; the clinker is then broken up with large bars and taken out through the doors. In this way, the clinker under the bars is removed. As a rule no barring down of the fire is required with this method of cleaning; as stated above, the set is operated by adopting a proper percentage of down runs to melt the clinker on to the grate.

With anthracite coal and some of the coals having very high fusing ashes, the clinker arches over suffi-

(*Continued on page* 542.)

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As the Journal Views It

Adding to the Burden

In the news columns of this issue of the AMERICAN GAS JOURNAL will be found a short item that is perhaps the best example of the attitude of public officials toward the gas industry that has yet been discovered. Recently the Westchester Lighting Company in the management of its business found it necessary to impose a service charge for each meter. The charge came after a long study and was put into effect reluctantly by the officials of the company, and then only to aid in meeting adverse conditions. But shortly after this charge became effective the tax board of one of the communities met to decide on the taxes for the year. Here was its opportunity to get "square" with the lighting company, and it proceeded to do so. It raised the taxes several thousands of dollars, with the naive comment that this covered the service charge.

We fail to recall any incident in the history of the gas industry that shows as short-sighted a policy as this; but, after all, it is typical of the attitude of certain political interests throughout the country. These interests seem to thrive on hounding public utility companies, and they pursue their course regardless of consequences.

Public utility companies are already overburdened with taxes from all sources, and any added load simply means that the companies are that much nearer disaster. In place of adding to the burdens of companies, it would seem that it would be the object of officials to aid in every way possible that service to the public might reach its highest possible state of efficiency. That, however, is too much to hope for under present conditions.

Attracting New Blood

During the past few weeks there have come to the office of the AMERICAN GAS JOURNAL several requests from college men who are graduating this year, asking for information regarding the possibilities of the gas industry. In each case the writer declared that he was contemplating seeking a position in this field, and stated that he was willing to start with any company that offered fair possibilities for the future.

It is a very encouraging sign when we are able to attract these young men to the industry, for it means that the future managers, executives, etc., will be found among men who will be properly trained from every angle. For a time it was said that it was impossible to attract men to the public utility business; that the future held out was not promising, and that no young man would care to place himself in a position where his motives were constantly subjected to attacks. Then, too, it has been pointed out that the remuneration never grew to such an extent that this became an inducement. To this last argument there can be little response, for it is true that public utilities are not in a position to pay large salaries. But there is a compensation that cannot be overlooked when this question is being considered. It is that of rendering a direct service to the public. Surely, there is some recompense in knowing the service given is absolutely essential to the public health and welfare. Certainly this is an attraction.

It is said that it is a very difficult task to secure men to take the high governmental positions because the monetary return is so small, and that a man does not like to give up his business in order to devote himself to official work. This same applies to the public utility business, except in the fact that the men who are unselfishly devoting themselves to the work usually are not backed by large fortunes but must depend entirely on the income resulting from their own efforts.

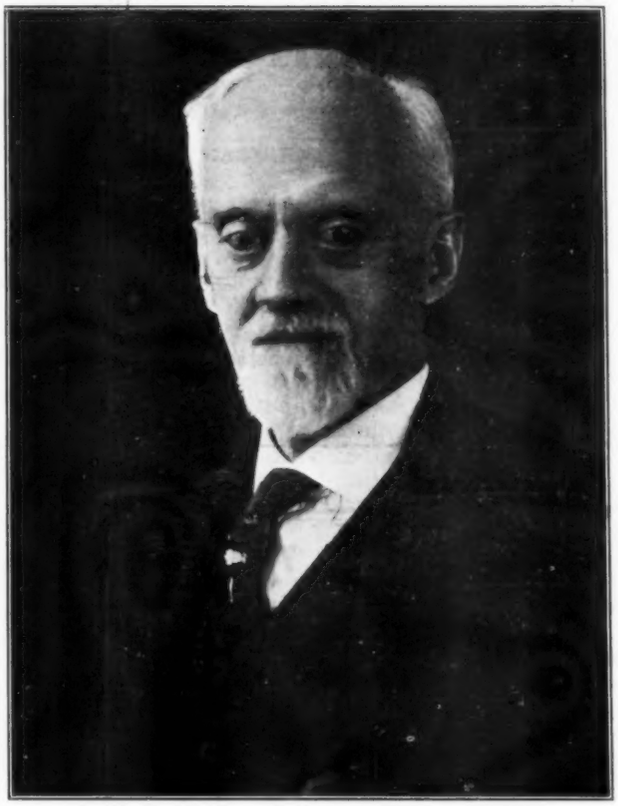
But, with all its drawbacks, the public utility field is a splendid one for an ambitious man who truly desires to render a service to humanity.

Many Mourn Alphonso Mason

The death of Alphonso Mason on June 7 at his home in Washington came as a severe shock to his hundreds of friends in the gas industry who only remembered him as the kindly, active man who seemed gifted with perennial life. His going has taken from our industry one of its staunchest supporters and a man whose greatest tribute can be expressed in the simple words "he will be missed."

It was a peculiar accident that resulted in Mr. Mason's death. He received a slight cut on a finger when shaving, at his hotel in Cincinnati where he had gone to attend the Natural Gas Association convention. Physicians tried to check the drip of blood but their efforts proved unavailing and it is believed that his heart was affected.

Mr. Mason was removed from Cincinnati to his home in The Dresden, Washington, D. C., where he had resided for two years, having removed from Philadelphia. Mr. Mason was buried from his former home, 4428 Chestnut Street, Philadelphia, his funeral being dignified with great simplicity exactly as he would have wished.



Alphonso Mason

Mr. Mason is survived by his widow, who was Miss Mary Caldwell and a daughter, Miss Helen Mason.

Mr. Mason was long connected with the Welsbach Company, of which his nephew, Sidney Mason, is president. Another nephew is president of the Commercial Trust Company f Philadelphia. It was in his work with the Welsbach Company that Mr. Mason made the huge host of friends who to-day are mourning his death.

Mr. Mason was an outstanding figure in the gas industry during his long service and it was through his activities that he made the friendships which he valued so highly. Of him it has been said that he knew more prominent men in our field by their first names than any other man. At the conventions throughout the year it was the usual thing to see him surrounded by a happy group listening to his clever comments which were interspersed with words of kindly advice and wisdom.

Mr. Mason was seventy-seven years old and was active until his final illness confined him to his bed.

Perhaps no greater tribute could be paid to his memory than the letter of President Sidney Mason to the various departments of the Welsbach Company. This letter said in part:

"His passing away causes a deep sorrow throughout our organization.

"His kindly and lovable nature endeared him to the entire gas fraternity and I know that many, if not all, will share our grief in his passing.

"It was his wish to serve till the blow of the whistle, and so he did

"The many years of his association; the influence of his comradeship and many acts of sincere and affectionate interest in our individual welfare, and his loyal and faithful service to the Welsbach Company, had endeared him to our affection and esteem.

"That he has passed from our midst brings a tug at the heart and a tear of regret and leaves with us an enduring memory of the happiness and inspiration of his love. Of him it may well be said:

"'Well done, good and faithful servant.
Enter thou into the joy of the Lord.'"

Gas By-Products as Chemical Raw Materials

(*Continued from page* 531.)

ities of which there is a distinct, though perhaps not only small, surplus. Both the engineer and the management official are, therefore, very much concerned in the problem of the disposal of coal products to the maximum advantage and in the maintenance of market conditions upon a sure and stable basis. Both should be much interested in the chemical program of the nation; for by development of a chemical program is insured an outlet for all of the commodities which they have, or plan to have, to offer.

The Chemist's Contribution

The gas business by developing many products other than its principal item of output, gas, first established the industrial need for the term "by-product." In fact, even to-day the "by-product industry" means to almost everyone the coal products industry. In this respect fuels engineers are to be congratulated and emulated. In fact, the chemist is most actively following the idea thus developed and is strenuously undertaking in the field of chemical products to establish well-balanced inter-related industrial systems.

The Price of Chemical Self-Sufficiency

In working toward an interlocking or integrate industry, the chemist has problems both of science and economics. Through his science he must develop processes which will utilize every product; waste cannot be tolerated. But these problems you may leave to him, and rest assured that he will solve them. The other problems of economics, or perhaps better called of political and social science, are your concern as well as his.

There are three methods conspicuously before our national legislators as proposals for the encouragement and protection of domestic chemical industry. The oldest and best known system is that of protective tariff. The second scheme is largely a development of the war period; it is the system of licensing of shipments involved in international trade, for this case, of course, it is import trade. The third scheme, also a creation of the war-time, is the system of embargo. All three plans for protection of domestic industry have ardent advocates and virulent opponents. Not being an expert on this subject, I can freely express an opinion, which will probably be of the usual little value. In my opinion no one of the three is a cure-all. The problem will be to fit each to particular situations and to combine all three into a composite system that will create no unnecessary burden as part of the price to be paid for our national self-sufficiency.

From the mineral industries we can well take examples to illustrate some of the possibilities of tariff, embargo and license. There are certain mineral products for which there is no possibility of obtaining domestic production adequate to our needs, simply because domestic resources do not exist. Many other mineral products are available in limited quantities and can supply more or less of the domestic demand in accordance with the relative cost here and abroad, of course including tariff charges if such prevail. Still others such as gypsum, coal, salt and similar materials, are available in such large quantities and at such relatively low cost of production that foreign competition is almost unthinkable. In the chemical industries much the same situation is found, though here, of course, one factor is distinctly different. If we do not have mineral resources there is no use in talking about protection of that particular mineral industry. No matter how much we "protect" it, it cannot grow from nothing. On the other hand, in the case of a chemical industry which may not yet exist, there is always the possibility of its development if afforded proper conditions and encouragement.

In the case of the organic chemical industries, the problem is still further complicated by the far-reaching application which the products have. The familiar example, of course, is the dyestuff industry, which in itself is not of tremendous magnitude if measured only by the dollar and cent value of its output, but which is of most amazing complexity if measured by the value of the products in which the dyestuff is more or less essential. Estimates of the latter sum reach into the billions of dollars per year and thus well justify that interest which has been so generally shown as to the future of our domestic dyestuff business.

The costs of self-sufficiency in these chemical industries often are twofold; first, those measured by the extra cost to the American user for the products produced in this country, and second, the indirect costs which are inevitable results of economic international relationships. For the vital necessities of national defense, public health, or general comfort, there is unanimity of opinion that the sum of these two costs is none too great a price to pay. On the other hand a promiscuous application of systems of protection or embargo will meet with widespread criticism. We must not forget that this country must buy abroad to some extent if it would sell abroad; and, too, we must remember that the only way in which Europe can pay us the stupendous sum which has been loaned abroad is through the supply of its products of factory or mine. It is important, therefore, to discriminate between those industries which are vital to peace-time comfort as well as to war-time security and the others which perhaps are not of such vital concern as to justify the excessive cost for their domestic perpetuation.

Fortunately, through the recent war period we

have discovered that that nation which is operating upon the most sound industrial basis is also the one most secure in time of hostilities. Military preparedness and industrial independence are indeed almost synonymous. It is a matter of national policy, however, for us to add just a bit to that bare necessity of self-defense and security so that we may have a reasonable economic "margin of safety" for the future. Just how our national legislators will work out this policy in matters of tariff, protection of chemical industry, chemical warfare, nitrogen fixation, and similar matters much in the public eye, only time can tell. That some solution must be reached and at an early date, we can be sure.

Vision and Determination Required

Economic laws are as inevitable in their action as the law of gravitation. If one will but seek to understand and profit by them, he can gain greatly. Ignorance of economic law is as serious as ignorance of the civil law; in either case the violator is likely to suffer seriously.

It will be that vision which will undertake a plan and program for long periods of industrial development upon a national scale, that will be most profitable. Large scale, integrated industry is a natural, indeed an inevitable, product of modern economic forces. If our legislators and our bankers (who in reality are the supreme court of American business planning) will but see with well-informed vision the possibilities of decades, instead of only the need for quarterly dividends, that development in chemical and fuel industries for which we all hope, is certainly assured. It will be quite possible then to realize that much needed co-operation which has been emphasized already. Ample gas products for chemical industry, and ample chemical market for gas products, will then be realized.

How Can We Increase Our Water Gas Set Capacities

(*Continued from page* 538.)

ciently to allow the fires to be cleaned without the use of hold-up bars. However, this type of ash collects on the side walls of the generator and must be barred down from above. Various mechanical devices have been made for barring this clinker off the walls. Most of these consist of a small hoisting engine which lifts and lets fall a heavy bar over the clinker. This bar usually weighs from 400 to 600 lb.

Facilities for Operating Valves

Time is saved at every change of cycle, if a set is hydraulically operated. It is customary now, especially on the larger sets, to equip the sets with hydraulic valves so that the operator can make a change between run and blow very quickly. Shorter cycles, which tend to increase capacity and efficiency, can also be used with such equipment. There is a limit to the shortness of cycle that we can expect from hand operation for hours at a time, and therefore we cannot get the full benefit that comes with short cycles in the operation of water gas sets.

Several years ago, one of your honored members, the late Charles F. Zeek, installed in his plant an automatic control for water gas set. This has been in successful operation for a number of years. Since then, this idea has been developed and perfected. With the use of these automatic controls for water gas sets, cycles as short as three minutes, the sum of both blow and run, can be obtained on a water gas apparatus. In this way, not only is capacity increased by maintaining a more uniform condition of the fire, but also the time of clinkering is reduced.

Each hydraulically operated valve on the apparatus is equipped with an electric switch. Should any valve fail to operate at the proper time, an electric horn is blown and the operator is told from a signal system which valve has failed to operate. In this way, the gas maker need not watch his apparatus; he can leave it to perform other duties, so long as he is within hearing distance of the horn, with the full confidence that in case anything goes wrong he will be notified.

Facilities for Coaling

Time is saved at coaling periods if one wagon or car would hold the coal for the entire coaling. By requiring a number of wagons or cars to coal, time is lost in shifting the wagons or cars. Some benefit is also obtained with dirty fuels by distributing the fuel into the fire by either hand scoop or charging funnel.

Resistance to Gas Make

In increasing the capacity of an apparatus, the rate of gas make should not be limited by the size of gas take-off pipes, nor the size of wash box. It is recommended when the capacity of a set is increased that a survey be made of size of the pipes to the wash box and from the wash box to the relief holder. Also, whether the exhausters and purifier equipment are of sufficient size to take increased make of gas.

In addition to the above features, all of which go toward making high capacity, it is recommended that your apparatus be equipped with measuring device for air and steam. With such devices, an operator can always tell when anything unusual is wrong with his apparatus and he can at least keep conditions constant.

Petition of Utah Valley Gas Co. Granted

Salt Lake City, Utah.—Increase in the rates of the Utah Valley Gas & Coke Company, serving Provo, Springville and Spanish Fork, is granted in a decision handed down by the Utah Public Utilities Commission.

"The financial condition of the applicant as shown at the hearing requires some increased revenue from its operations, in order that it may be able to set up an adequate depreciation reserve, maintain its credit and to enable it to obtain the necessary capital to meet the needs of the public for service," the findings say.

The company is permitted to charge a net rate of 20 cents a hundred cubic feet each month for the first 300 ft. In the application for an increase, permission was asked to charge a net rate of 25 cents for the first thirty feet. The rate granted by the commission is one cent less a hundred feet in each of the other classifications than asked by the company. The schedules granted by the commission follow: First 300 cu. ft., gros 21 cents, net 20 cents; next 1,700 ft., gross 18 1/5 cents, net 17½ cents; next 3,000, gross 16½ cents, net 15½ cents; next 10,000 ft., gross 15½ cents, net 14½ cents; all over 15,000 cu. ft., 14½ cents; net 13½ cents.

"The Scrubber Standpipe System"*

What Seven Years' Experience Has Brought Forth

By R. C. CONGDON, Atlanta, Ga.

On Dec. 21, 1913, our company commenced the use of my scrubber standpipe system at the Atlanta Gas Works. This was the first installation in this country. Since then, it has not been necessary to clean our standpipes.

The standpipe apparatus is very simple in design, but it has required time and experience to bring it up to its final stage of development. When deciding to present this paper, I had in mind the many gas works in the South and elsewhere using my patented system, and I felt sufficient time had elapsed since the installations at the various plants to afford a profitable discussion.

In 1914, I presented a paper to the American Gas Institute entitled "The Development and Operation of the Congdon Scrubber Standpipe System." The design then recommended has been modified somewhat, especially for large gas works. Instead of using sheet steel, the standpipe is now made up of a cast-iron valve box and extensions of eight-inch pipe to reach the hydraulic or foul main, and the lower seal.

It was at first thought that the pipes would have to be quite large, but we find that a pipe eight inches square is ample. Tests made after charging the lower retort at our plant show apparently no pressure difference between the bottom and top of the standpipe.

Funnel Provided Originally

The original design provided a funnel and seal at the top of the standpipe, and liquor was fed into the funnel and could be seen from the operating floor. This liquor was delivered at the rate of six to eight gallons a minute and at very low pressure. The liquor is now delivered through a one-eighth-inch nozzle at thirteen pounds pressure. When thus delivered, it hits the baffle plate with considerable force and splashes to the sides of the pipe in a much more effective manner than is accomplished by a larger stream moving at slower speed. We used to have some trouble on account of liquor hitting the valves in the standpipe and splashing into the retort standpipe connections. The large stream under small head did not splash properly when coming into contact with the baffle plate, but fell straight through the center of the pipe instead of flowing down its sides. With a smaller stream at higher pressure, we have obviated the trouble of liquor splashing into retort standpipe connections.

The original design provided an eccentric latch for holding the valve closed. Experience has shown that the design was too delicate in the hands of retort house stokers who hit the latch with their heavy tools and because of the leverage heavy strains were brought against the outside lever and inside valve arm which soon made the eccentric latch ineffective. We now use a different type valve latch and use a weighted lever arm.

The design of the retort standpipe connection has been changed. This connection is now made of cast iron instead of a combination of steel collar and steel pipe. It is shorter and easier to construct.

Changes in Lower Seal Arrangement

The lower seal arrangements have also been changed. Instead of using a continuous trough, we now have individual seal boxes and the liquor flows from these boxes to a pipe leading to the tar well or separating tank. By observing the various streams, it is possible to know whether or not the various sprays in the tops of the standpipes are receiving sufficient liquor. Occasionally, the stream from a seal box will show that it is growing smaller. When this condition is observed, the operator unscrews a plug on the top of the spray and inserts a small rod to clean out any material which may have lodged in the one-eighth-inch opening. We have very little trouble with the sprays as all of the liquor flowing to them passes through a series of fly screens.

The individual seal boxes shown in my original design have proven very satisfactoy, but unless one prefers to operate without a seal, I would recommend the usual hydraulic main, especially for small works.

We have recently refilled the arches in our plant, have installed the new design standpipe system, and have done away completely with the washboxes, which latter had taken the place of our original hydraulic main. The standpipes are connected direct to the foul main and in consequence all the tar in the retort house flows down the various standpipes through the lower seals and finally to the separating tank at the end of the retort house. The valves in the standpipes make this arrangement practicable. It is not possible to maintain the same pressure or vacuum at the outlet of each retort. The amount of variation will depend upon the operation of the retort house governor or the Huntoon governor at the exhauster, and on the design of the pipes and mains used to convey the gas from the retort house, etc. There is probably in most retort houses a variation of one or more tenths, and where a number of retorts are connected to a single standpipe it is necessary to have valves to prevent drawing in air or the escape of gas. I have known explosions to occur in the usual hydraulic main which blew the tar to the roof of the retort house. I prefer to operate under a slight back pressure. The valve inside of the standpipes prevents the loss of a great deal of gas. It is also useful in preventing coke and coal from dropping into the lower seal and is useful when scurfing retorts.

At present, we are putting through each standpipe 1.4 gal. of liquor per minute. The temperature of the liquor at the top of the pipe is 152 deg. and the

*Paper read at Southern Gas Association convention.

lower seal 177 deg. We use centrifugal pumps to circulate the liquor.

Careful analysis has shown that there is no loss of ammonia and the tar is of better quality than that obtained when using the old standpipe system.

Some Advantages

The advantages of the scrubber system over the old-style standpipes are as follows:

The old heavy continuous work of keeping standpipes open is done away with. This means a considerable reduction in payrolls, and no interruption in gas making.

The expense and labor of pulling pitch from the hydraulic main is obviated, and the danger of the hydraulic main losing its seal, explosions, and overflowing of tar is avoided.

The valve inside of the standpipe is a much more positive gas cut-off than the seals of the dip pipes.

No provision is required for taking care of tar and liquor overflow as is usual with any sealing system on top of the bench.

The retort house is much cooler.

Operating without seal, more even pressure conditions in the retorts are obtained, and the yield of gas is increased.

Using a new combination DeBrouwer charging and discharging machine, we are charging 1,700 lb. of coal in our through retorts which are 21 ft. 7 in. long, and are obtaining a yield of 7.5 cu. ft. of 580 heat unit gas per pound of coal. 1,700 lb. of coal charged into the retorts practically fills them, and the coke we are obtaining is proving very satisfactory in our water gas plant.

Besides many successful installations of this standpipe system in this country, it is also in service at Montreal, Canada, and is being tried out at the Beckton plant in London, England, and elsewhere abroad.

Our plant in Atlanta consists of eleven through benches of nines. The standpipe system requires the work of one man about three hours each day of twenty-four hours. The work consists of raking small lumps of carbon from lower seal boxes.

Pertinent Facts Concerning Coal

By J. B. DILLON

At Fort Collins, Col., the Retail Dealers of Colorado have just finished their fifth annual convention. Some very important points were brought out during the convention.

Charles A. Lory, president of Colorado Agricultural College after making a plea for the American spirit in business and for the freedom from too much Government restrain and regulation, said:

"Up to the present time the greatest developments in Colorado have been on the Eastern slope. The Western slope is a wonderful empire of greater opportunities, and in the next ten years should see a great development. No region in the United States, acre for acre, has larger potential resources. Coal in this section of the State is rich, the Union Pacific Railway owns 75,000 acres of remarkably rich coal land in the southwestern part of the State that had not been touched. The coal fields in the northwestern part of the State which are still to be developed are estimated by geologists to hold enough unmined coal to supply the entire world at its present rate of consumption for 400 years. There is no danger of running out of coal in Colorado. Colorado is in a natural position to serve the country, as she is on the crest of the continent, and the State has everything necessary to become a great industrial State."

W. W. Curtis, vice-president of the Colorado and New Mexico Coal Operators Association, said:

"The coal situation is serious and if you can do anything to help improve it, get busy and do so. Every retailer who is financially able should as a public duty buy all the storage coal he can handle. Coal will be scarce next winter and prices will be high.

"One thing that has retarded the buying of coal has been the fear of a reduction in freight rates, and some retailers have said that if they had the money they would not store coal. There is no chance of such a reduction. If the railroad had the volume of business that they had a year ago with the freight rates in effect before the last increase they would now be running below expenses and several million dollars daily below the figures the Government allowed during the war as a legitimate minimum profit. Under these conditions a freight rate reduction now is not to be expected. The facts that mines are not receiving the usual orders for storage coal at this time of the year would tend to create a shortage next winter."

F. B. Choate assistant general freight agent of the Union Pacific Railroad, said:

"There is virtually no storage coal in the West, due to a falling market, the money stringency and agitation for lower freight rates. There will be a big transportation problem in the fall when coal is demanded in a hurry. Then there will be big crops to move and the demand for cars to handle the agricultural products will be heavy without consideration of the added burden of moving coal that should be moving this spring and summer. At present there are 450,000 freight cars idle."

The writer has for years been trying to impress upon all concerned the necessity of moving as much coal as practicable between the months of February and June, and let building material and fruits, etc., have their share of the cars when called for, knowing that local yards and supply depots are filled with coal.

As I have stated previously, and now reiterate, there is absolutely no excuse for a coal shortage at any time, nor a car shortage.

What we lack that creates these shortages is system, and Mr. Choate has given credence to that fact.

Discusses Service Charge

The gasmen of the Pittsburgh district were interested in reading a report of the Department of Public Utilities of Massachusetts to the State Legislature regarding the "service charge" and all gasmen will undoubtedly be interested in reading their definition of "service charge," which is stated as follows:

"The term 'service charge' has no definite technical meaning. It is frequently used, however, to distinguish a rate or charge which is not dependent upon or related to the amount of gas or electricity used by a customer during a given period from a rate or charge for each unit of gas or electricity so used

measured by a meter. Its employment has resulted from the attempt to recognize in rates certain factors in the expense of supplying service to customers which are not proportional to the number of units supplied to each. Two such factors are so distinctive as to be commonly acknowledged as proper bases for rate structures. They are often spoken of as 'standby,' 'readiness-to-serve,' or 'service' costs, and charges in the rates based upon such costs have been given like names. The commission has therefore assumed that the Legislature in its resolve intended to use the term 'service charge' not in any restrictive or technical sense, but rather as describing all charges or rates made by gas or electric companies to their customers, which are independent of and not directly affected by the amount of gas or electricity actually used."

The report of the commission goes thoroughly into the necessity or expediency of service charges, winding up this part of their report by saying:

"The proposition of a service charge in gas rates is by no means novel. It is a theory of rate making long since adopted and applied in rates in other parts of the country. In the neighboring State of New Hampshire a question over a proper minimum charge for gas gave rise, seven or eight years ago, to a painstaking study of the matter by the Public Service Commission, and experience and further study has led that commission to introduce and require in rates for gas a service as distinguished from a minimum charge, in additon to a rate per thousand cubic feet consumed. A similar policy has been followed by others of the important commissions of the country, and in some instances charges in gas rates based not merely on distinctively customer costs but on respective 'demands' of the customers have also been introduced. This last factor, however, has been more commonly employed in the making of electric rates."

The commission ends its report with the following conclusions or recommendations: The problem of just and reasonable rates which are fair to all and are not unjustly discriminatory or preferential is not one of abstract but rather of applied theory. Its solution may not necessarily be the same for every company or for any one company at all times. The business of making and of distributing gas and electricity every year brings some addition to the variety and usefulness of its application. If it be assumed that the only just and reasonable rate is a uniform price or rate for each and every cubic foot of gas or kilowatt hour of electricity supplied a customer regardless of every other consideration, obviously there is no justification for a service charge. But this is not the conclusion of those who have studied and investigated the subject most thoroughly not in the interest of the companies but rather of their customers. While the department is by no means of the opinion that service charges should be indiscriminately adopted, yet it is convinced that such a charge may not only be justified under some circumstances but perhaps be the practicable means of adjusting fairly the relative payments which customers should make for the services respectively rendered them.

"But a more important consideration which has impressed the department in the course of its inquiry is the inconsistency of those particular limitations upon its otherwise unrestricted authority over gas and electric rates. The Legislature has the undoubted right to limit the department's authority with respect to rates to any extent which it may deem advisable. But a divided responsibility is rarely in the public interest, and so long as the legislative policy is to delegate practically the whole field of rates to the department, it hardly seems necessary or expedient to restrict its authority in this one particular. Nor is it probable, in the light of available experience and knowledge, that such a limitation would be imposed now were the issue the enactment for the first time of these provisions of the statute.

"The department therefore recommends that these restrictions be removed and that the law authorizing it, upon complaint, to reduce the price of gas or electricity be amended so that it may modify or annul any service or similar charge adopted by a gas or electric company on its own initiative. A bill embodying this recommendation is attached."

Examination Paper on Gas Engineering

(*Continued from page* 536.)

horizontal retorts, and state the likely causes of a breakdown and the method of dealing therewith. (40).

5. What conditions are essential for the efficient working of a carbureted water gas plant? Give the steam and air blast pressures required and the fuel and oil consumptions in relation to the colorific value and the volume of gas made. (40.)

6. Describe the method of removing sulphureted hydrogen from crude gas by means of oxide of iron stating the amount usually present at the inlet and outlet of each purifier in the series. Give the chemical reactions involved in purification and in the revivification of the oxide, the percentage of free sulphur present after successive foulings, and the volume of gas purified in relation to the weight of the oxide used. (40.)

7. Describe a method of manufacturing neutral sulphate of ammonia. (35.)

8. Give a description of the apparatus required and the method employed for the determination of the inert constituents of town's gas. (35.)

9. What type of plant or combinations of plant would you recommend for the production of gas of (a) 425 B.t.u. gross and (b) 500 B.t.u. gross, having regard to the working costs and values of raw materials and residuals current during the last year? Give the reasons for your selection. (40.)

10. Discuss the relative advantages of distributing town's gas of (a) 425 B.t.u. gross and (b) 500 B.t.u. gross at the same price per therm. Under the above conditions, which quality would be preferred and for what reasons, by consumers of gas for: (a) power purposes, (b) lighting, (c) heating, (d) cooking? (40.)

Gas Company Rejects Ordinance

Columbus, Ohio.—Within a few hours after referendum petitions, submitting the measure to popular vote at the August primaries, had been filed with the city clerk, the Columbus and Federal Gas & Fuel Companies filed with the same official a refusal to accept the amended ordinance increasing the Columbus gas rate. The amended ordinance required acceptance by the companies before it would be effective. Declination by the companies kills the amended ordinance and ends the referendum.

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company	Issue	Maturity	—Market— June 16, 1921 Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May 1, 1925	88½	89½
Brooklyn Union Gas Co.	First Consol. 5s	May 1, 1945	77	78
Columbia Gas & Elec. Co.	First 5s	Jan. 1, 1972	80	83
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 7½s	Dec. 1, 1945	96	96⅜
Consol. Gas, Elec. Lt. & Pr. Co.	General 4½s	Feb. 14, 1935	71½	73
Consol. Gas Co. of New York	Sec. Conv. 7s	Feb. 1, 1925	99¾	100
Consol. Gas Co. of New York	One Year Sec. 8s	Dec. 1, 1921	99⅞	100⅛
New Amsterdam Gas Co.	First Consol. 5s	Jan. 1, 1948	62	63
Denver Gas & Elec. Co.	Gen. (now 1st) 5s	May 1, 1949	79	81
Detroit City Gas Co.	Gold 5s	Jan. 1, 1923	90	91½
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan. 1, 1928	95	97
Hudson County Gas Co.	First 5s	Nov. 1, 1949	73	75
Laclede Gas Light Co.	Ref. & Ext. 5s	Apr. 1, 1934	71	73½
Louisville Gas & Elec. Co.	First & Ref. 7s	June 1, 1923	94	95
Michigan Light Co.	First & Ref. 5s	Mar. 1, 1946	68	70
Milwaukee Gas Light Co.	First 4s	May 1, 1927	80½	81½
Pacific Gas & Elec. Co.	Gen. & Ref. 5s	Jan. 1, 1942	75½	76
Pacific Gas & Elec. Co.	Col. Tr. Conv. 7s	May 1, 1925	96	97
Pacific Gas & Elec. Co.	First & Ref. 7s	Dec. 1, 1940	98	99
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov. 1, 1937	84½	86
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sept. 1, 1947	70¼	72
Chicago Gas Lt. & Coke Co.	First 5s	July 1, 1937	74½	75½
Portland Gas & Coke Co.	First & Ref. 5s	Jan. 1, 1940	73½	75
Seattle Lighting Co.	Refunding 5s	Oct. 1, 1949	65	67
Southern California Gas Co.	First 6s	Nov. 1, 1950	83	85
United Gas Improvement Co.	Two Year 8s	Feb. 1, 1923	98	98⅜
Utica Gas & Electric Co.	Ref. & Ext. 5s	July 1, 1957	75	77
Washington Gas Light Co.	General 5s	Nov. 1, 1960	77½	78
Western States Gas & Elec. Co. of California	First & Ref. 5s	June 1, 1941	72½	74½

Gas Co. Earnings for April

Detroit, Mich.—In excess of operating costs the Detroit City Gas Company made $65,348.80 during April, according to a report submitted to the council by Henry Steffens, Jr., city controller. In March the revenue remaining after operating costs had been met was $2,733.45, he reported.

The operating costs as figured by Mr. Steffens, however, do not include any charge for depreciation or for interest on bonds or notes, he said in his communication. The company has materially reduced its operating costs by reducing wages and by its ability now to obtain materials cheaper.

According to the controller, a contract entered into by the company with the Semet-Solvay Company helps out the company financially to some extent. Under this contract the Semet-Solvay concern provides 8,000,000 cu. ft. of gas daily at 30 cents per 1,000 cu. ft.

In March the company sold 240,730,000 cu. ft. less gas than for the same month of 1920. In April the falling off was 169,750,000, as compared with April, 1920.

The company has not been able to set aside any money for a dividend nor for the purpose of meeting interest on notes due the American Light & Traction Company, Mr. Steffen's report says. This interest now amounts to more than $300,000.

Gas Company Shows Deficit for Year

Kingsburg, Cal.—The Riverbend Gas & Water Company, operating in Dinuba, Reedley, Parlier, Kingsburg and Fresno County, reports to the railroad commission for the year 1920 that its operating revenue was $99,858.16, operating expenses $97,624.47, giving a net operating revenue of $2,233.69. Interest, rent and other deductions totaled $6,777.46. The net corporate loss for the year was $4,541.77. The deficit at the beginning of the year amounted to $1,479.87. Miscellaneous additions to surplus for 1920 amounted to $137.30 and miscellaneous deductions were $422.63. The accumulated deficit at the end of the year amounted to $6,306.97.

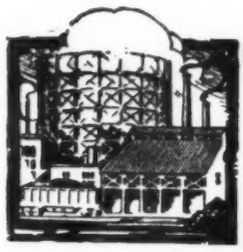
Gas Company Stock Issue Is Authorized

Springfield, Ill.—The Western United Gas & Electric Company, which serves various towns and cities in northern Illinois, has been given authority by the Public Utilities Commission to issue $5,000,000 in 7 per cent cumulative preferred stock.

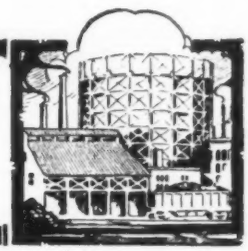
The money is to be used in extending the company's service and meeting obligations.

Cut Made in Rates

Des Moines, Iowa.—The Des Moines Gas Company has announced a reduction of 15 cents a thousand in the price of gas. The reduction, it is explained, is due to a decrease in the cost of producing the commodity. The new price is $1.35.



NEWS OF THE GAS INDUSTRY



U. G. I. Seeks Change in Philadelphia Contract

Operation Matter of Weeks Under Present Conditions, Says Official

Philadelphia, Pa.—Samuel T. Bodine, president of the United Gas Improvement Company, told the councilmanic committee at a public hearing of the gas commission's report that operation of the Philadelphia Gas Works is "a matter of weeks" unless some immediate financial relief is granted.

This statement came as the startling climax to a session marked by disputes between citizens and representatives of business and civic organizations, and more than an hour of cross-questioning of Milo R. Maltbie, chairman of the gas commission.

Francis B. Bracken, attorney for the U. G. I., read a prepared statement, after being introduced by Mr. Bodine, in which the first direct request was made for immediate relief.

"The fact may as well be faced," he said, "that whatever the disposition of the company might be, it is unable to continue operations on the present basis and must have immediate relief."

By way of preface to this statement, Mr. Bracken said the company already has sustained losses in excess of $4,000,000; that the loss for this year will be $2,800,000, so that its total loss from 1917 to the end of this year will be $7,000,000, unless relief is granted by the city.

"The United Gas Improvement Company is ready to discuss the matter of a modification of the contract," he concluded, "but in view of its continuing losses already mentioned, it is essential that some emergency relief should be afforded pending the conclusion of the negotiations."

"What would happen if no emergency relief is granted by the city council?" demanded Councilman Cox.

"I fear to think," said the attorney. "You may draw your own inferences if the company cannot continue operations."

"Well, how long can you continue at the present rate?" persisted Mr. Cox.

"I cannot answer that question," said Bracken.

Mr. Bodine then stepped forward. "I can answer it," he said. "It is a matter of weeks. It is my duty to say now that the burden is on the city council and the Mayor. I started in April calling attention to this situation, and I have done all that it is possible for me to do."

Councilman Patton interjected at this point. "I do not intend to take that into consideration," he said. "If it is necessary for the U. G. I. to go to the wall, the city of Philadelphia can carry on its own gas works."

A plea for co-operation then was made by Councilman Bucholz. "If the city operates its own gas works," he said, "it will lose the $4,000,000 a year revenue it is now getting from the U. G. I. We cannot do as well as the company, and that fact might as well be admitted. If the city runs the work you will not get $1 gas, and you will be lucky if you get it for $1.50 a thousand feet."

At the opening of the hearing Chairman Maltbie of the commission was called on to give a summary of the report and the conclusions reached in it, with the recommendations made. He spoke for fully an hour, stressing again and again the point that he held no brief for the U. G. I. but that he and other members of the commission consider it is to the public interest at this time to have a new lease.

According to Mr. Maltbie, it has become increasingly expensive to make gas with oil, as is required under the old candle-power standard. This is not required under the new B.t.u. standard. The present plant is far from adequate to meet the expanding needs of present or future.

The commission, Mr. Maltbie said, accordingly has recommended emergency extension of the water-gas plant for the coming winter to take up the peak load, expenditure of $5,000,000 for the construction of a coke oven or vertical retort plant for the winter of 1922-23, and expenditure of between $15,000,000 and $20,000,000 thereafter for extension of that plant and of service to points not now reached.

The speaker, in answer to questions, expressed the opinion that the U. G. I. is financially able to continue operating on the 22-c.p. standard. That, he said, would give the city in 1927, when the plant reverts to Philadelphia, a factory capable of producing only on the candle-power standard and not sufficient to meet the city's needs.

Mr. Maltbie expressed the opinion that the $14,000,000 amortization demand made by the U. G. I. is too high but said that he and other members of the commission feel the city should make some terms for paying off losses sustained by the company.

William Wick, of the North Philadelphia Business Men's Association; James Lennon, of the Logan Improvement Association; Edward B. Ziegler, of the United Business Men, and a number of others then cross-questioned Mr. Maltbie. Some of them insisted that the U. G. I. is taking something from the public.

Mr. Bracken then took the floor and said that the testimony before the gas commission had shown the necessity of a new plan for operating the gas works, for these reasons:

"First—The increased expense of operation has made it financially impossible for the U. G. I. to continue the performance of the lease in accordance with its terms.

"Second—The changes in economic conditions affecting the gas industry require the adoption of new methods of gas manufacture to preserve the value and efficiency of the gas works."

After referring to increases in the

price of oil, the speaker added that "the general opinion of the industry is that the demands for gasoline and petroleum products generally, with the resumption of industry, will result in a return to high prices for gas oil, and no reasonable hope can therefore be entertained that the company's loss in the near future will be diminished. If it should be obliged to resume the manufacture of 22-c.p. gas, its loss, of course, will be greatly increased."

Mr. Bracken pointed out that in addition to the possible total of $7,000,000 in losses up to the end of this year, additions to the manufacturing and distributing systems during the next two or three years will be necessary at a cost of not less than $6,750,000.

"It is obviously impracticable to finance such losses," he said, "even if it were not requisite to provide funds for additions and improvements. As the president of the company testified before the commission, it was recently found necessary to renew a loan of $7,500,000 at the high rate of interest then prevailing. No company, however strong its book showing in assets, can successfully appeal to the investing public or banking community for loans intended to finance losses of large magnitude demonstrably assured.

"There is no feasible way of raising the money required for the necessary development of the property except on the credit of plant earnings, and the commission has demonstrated that if the improvements recommended to meet the marked change in the gas-making industry were amortized over a period of twenty-five years, the increased burden to gas consumers will be comparatively small.

"Not only, therefore, is it plainly the part of wisdom from the city as owner of the plant, having regard to its continued value and efficiency, but as well to the gas consumer, in the long run, that it should be developed along scientific lines, as proposed by the commission. The consumer of gas is in the main a taxpayer as well, and it seems too plain for discussion that it is to his interest in both capacities to see that the city shall preserve unimpaired its most valuable single asset."

Hold Hearing on Commission Report

Philadelphia, Pa.—Cost or gas to the consumer in this city will be between 17 and 20 per cent higher than at present, under the recommendations made by the municipal gas commission, but eventually it may come down even below $1 per thousand cubic feet, the present rate, if improvements suggested by the commission are carried out.

Statements to that effect made by two members of the commission were among the highlights at the first public hearing held by council's committee on transportation and public utilities to consider the gas report.

The four-hour hearing was stormy, personalities flying thick and fast, and the commission composed of five men was criticised frequently for its report in which it advocated retention of the British thermal unit as the gas standard, and the making of a new lease between the United Gas Improvement Company and the city.

It was argued by representatives of various civic and business bodies that the present lease with the candle-power standard $1 rate should not be broken.

About sixty-five persons attended the session, including Samuel T. Bodine, president of the United Gas Improvement Company, and other officials of the company. Hugh Montgomery, chairman of the councilmanic committee, presided. None of the officials of the U. G. I. spoke.

Thomas F. Armstrong and Howard R. Sheppard were the only two members of the commission present, the other three being unable to attend. Subjected to a cross-fire of questions, they declared that the commission arrived at its conclusions after an impartial investigation. The recommendations made by the commission as to a new lease and improvements, they said, were to meet present conditions surrounding gas making, and to avert a serious situation in 1927, when the present lease expires.

Asked how the average consumer is affected by the provisions of the gas report, both Mr. Armstrong and Mr. Sheppard stated that retention of the B.t.u. and the price of $1.05 to $1.10 per thousand cubic feet will mean between an increase of 17 to 20 per cent in the price of the gas. They qualified these admissions with the statement that with the recommendations of a municipal gas body to regulate rates every six months or year, prices would change, and eventually new improvements and economical operation will greatly reduce cost of gas.

Mr. Armstrong denied emphatically that gas bills under the B.t.u. standard now provided are 100 per cent higher. From reports submitted to the commission, Mr. Armstrong said that possibly the consumer consumes and pays 10 per cent more than under the old system.

Company Making Extensions

Malone, N. Y.—The gas department of the Malone Light & Power Company is adding a four-foot water gas set to its present straight coal gas equipment, which will take cake of the unusual demand which the early coming of warm weather occasioned, the increased send-out in May totaling about 35 per cent more than in April and equaling the send-out for the largest months in 1920.

The company's street department is also engaged in laying mains to outlying districts and already have completed several streets, thereby securing a large number of new customers.

The company is also refilling one of its benches of fours, the bench which is being repaired having had four years of use since its installation.

Erecting New Holder

Concord, N. H.—Work has been commenced on the erection of the new gas holder at the works of the Concord Gas Company.

The new holder, which will have a capacity of 500,000 ft., will meet the needs of the local company and enable it to supply gas to its patrons at a steady pressure.

The present holder has a capacity of 120,000 cu. ft. and has to be filled at least twice daily to supply the local demand.

It is expected that the new holder will be completed in about five months.

$325,000 Building to Be Built in Oakland

Oakland, Cal.—A new six-story story office building to cost $325,000 will be erected on the southwest corner of Clay and Seventeenth Streets by the Pacific Gas & Electric Company, it was made known by C. W. Dickey, architect in charge. Active construction will start in a few weeks, Dickey says. Provisions will be made to add two stories.

House Heating Problem

Under the above heading the Portland Gas & Coke Company placed the following advertisement in a local newspaper, in the reading columns. It is one of the best that has come to the attention of the editor of the American Gas Journal:

Time was when water on tap was an unknown luxury, when one had to go to the pump or the well and carry in what was needed. No wonder that it was customary in those days to bathe only once a week. To-day, who would want to return to that primitive way of securing water?

Time was when fire had to be made by friction. It was no picnic. Then came the match. It helped light the fire and with almost fatalistic stoicism people considered that it was part of their lot, while here on earth, to have to wrestle all winter with a stove or a furnace. It was no sinecure to have to split the wood, and many a finger was more or less permanently injured by the mischievous axe. And the firing, the stoking, the ashes many a family decided to be de- and the soot! No wonder that many a family decided to be deprived of the joy of a home with a flower garden and imprisoned themselves in a little apartment, rather than play stoker in a dirty basement.

And then came the Gasco furnace, which at one fell stroke knocked off the shackles and freed them from all basement chores.

Of all ingenious devices the nearest human, of all labor-saving inventions the most gratifying, of all the blessings in a material and housekeeping sense the most highly appreciated, the Gasco furnace took the town by storm—but when the end of 1920 drew near, the splendid contract for crude oil which the gas company had made before the war came to an end and oil having advanced by leaps and bounds to almost four times its pre-war value, an advance in gas rates came into being based on the new oil values.

Temporarily the heating bills showed a sharp increase, and this fact was eagerly grasped and diligently spread broadcast, but after all, the truth is that even at the temporary peak rates not a soul that had enjoyed the blessings of the emancipator had any desire to go back to the old way of heating.

Some one heard of a neighbor who got a gas bill of $33 and immediately concluded that this meant some huge sum for the year. As a matter of fact this particular bill proved to be not for a month but for 33 days, ergo, was equal to $30 for 30 days. People did not know that it is a fact that if you multiply the bill for the coldest month by five you get the total bill for the year. There are only nine months in the heating season, and some of those nine don't play the game very strenuously. You know, if you stop and think a moment, that while you use the furnace a little in May, in April, in September, it is quite different from the use you make of it in January. It must be patent that to multiply the high month 9 or 8 or even 7 would be absurd. Experience proves beyond a doubt that the correct multiple is five.

Therefore the "neighbor" with the high bill of $33 for a month and three days could rest assured that his bill for the season would be about $150. Would that be satisfactory to "neighbor"? Well, you ought to see his eyes twinkle. "Would it? Well, man alive, it would cost me that much for wood or coal or Gasco briquets. And here I am free of all chores and dirt, my basement is a dream (not a nightmare, but a happy dream) and when the winter is over I won't have to send my draperies and curtains to the cleaner or my rugs to the rug store. All is as spick and span as it was a year ago. I tell you honestly, that if I had to pay $10 a month extra for the pleasure of having my heat on tap, my requirements looked after by the almost-human thermostat, my basement free from dirt and fuel, my house evenly heated at all times, I would consider the $10 a very small expense for the joy I got out of it. But it didn't cost me $10 extra, it didn't cost me a cent more!"

Hundreds of customers who used either a Gasco furnace or a gas-fired boiler have expressed themselves along these same lines, and with their permission, a few of these comments are going to be published in the advertising columns, day by day. These men are emancipated from basement slavery. The time will come when every man of average acumen will be heating his home with gas and some day people will be telling their children about the days when every fellow had to be his own janitor and stoker.

To meet the demand from smaller homes, the gas company has just perfected two additional Gasco furnaces, one a pipeless Gasco that will heat small homes of, say, three or four rooms and an eight-section Gasco furnace that will take care of five rooms. Both contain identically the same "Vento" cast-iron radiation which the big Gasco furnaces have. There is no difference in quality, durability and efficiency. The only difference is capacity, size and price.

Any mechanic or skilled working man can possess one, just as well as the multimillionaire. It may cost him for his little home only $150 in all (part cash and balance in monthly installments), while it cost Mr. Richman $2,000 or more, but the result is just exactly the same: Freedom from chores, "even heat" all day, no dirt, soot, ashes or overheated joists. Just comfort, joy and happiness, and the bill should not exceed cost of wood, coal or briquets.

True, a fuel that is metered into your house by the cubic foot can be used carelessly, thoughtlessly and wasted. But it should not. The exceptional case where it is wasted in heating rooms not in use, or heating rooms while they are being aired (!) does not controvert the statement that, all things considered and if properly used, gas the emancipator is no more costly than solid fuel and in many cases cheaper.

Watch the ads and see what our delighted customers say.

Slight Raise in Gas Rates Is Allowed

Sheboygan, Wis.—The railroad commission has turned down the main requests of the Sheboygan Gas Light Company in its petition for increased rates and other considerations, but the commission allowed certain changes in the schedule, necessitated by increased cost of operation, which gives the company authority to make a slight increase. Since the main request relating to charges for extensions of system were dismissed by the commission, the company announced that it would make an attempt to operate without making any changes and will withdraw its petition.

N. J. Gas Rate Increased

Trenton, N. J.—An increase in rates from $1.40 to $1.70 per 1,000 cu. ft. of gas has been authorized for the Medford Gas Company, of Burlington County, by the Public Utilities Commission in order to permit the company to earn a profit of 6 per cent. A service charge of 75 cents a month to each customer is continued. The new rate becomes effective July 1.

Attack New Gas Rates

Dayton, Ohio.—J. F. Briggs and other Dayton gas consumers have filed action in Common Pleas Court demanding that the city commission rescind the new ordinance fixing a graduated schedule of gas rates ranging from 50 cents up to $1 per thousand feet and restore the former flat rate of 34½ cents. Judge Martin will hear the pleadings for a temporary restraining order.

Ashtabula Gas Co. Loses Court Fight

Columbus, Ohio.—Affirming its former decision that utilities may not collect a "readiness to serve" charge as such, the State Supreme Court has sent the case of the Ashtabula Gas Company against the public utilities commission, involving the question of rates, back to the commission for further order.

There is nothing to prevent the commission from including in the regular rates an additional rate to equal that intended as a "readiness to serve" charge. The decision, it is understood, will permit the commission, if it sees fit, to increase the rate enough to absorb the "readiness to serve" rate of 25 cents which the commission formerly had allowed as a separate charge.

The commission's rate, which the company objected to in an appeal to the Supreme Court, was 36 cents a thousand feet and a "readiness to serve" charge of 25 cents a month.

To Sell Gas Coke

The Denver (Col.) Gas & Electric Company is using a very attractive ad to sell its gas coke. A silhouette shows the usual chair, a box piled on the chair, books piled on the box, and little Bobbie reaching after the jam-jar.

Bobbie's little doggie is urging him along by attempting the climb himself.

Bobbie's reach is several feet too short, and the caption is:

Higher and harder to get next fall. Buy genuine Gas Coke now. Reduced from $8.50 to $7 a ton until July 1.

The writer believes that it is these little human nature pictures that cause many to read these ads who otherwise would not.

Engineers' Leader Dead

Milton Snelling, fifty-two, of Washington, D. C., and general president of the International Union of Steam and Operating Engineers, was found dead in bed at the Standish Hotel, Denver, Col., Thursday morning, June 9, by a number of his friends who had gone to wake him.

Mr. Snelling came to Denver for the A. F. of L. convention from the headquarters of his organization in Chicago. A widow and two sons survive.

It is stated that Arthur M. Huddle, vice-president, of Chicago, will take up the duties that Mr. Snelling hoped to effect.

$2,067,000 Refund Due to Gas Consumers of Frisco

San Francisco, Cal.—The Pacific Gas & Electric Company must return $2,067,000 to gas consumers of San Francisco, according to a decision handed down by Federal Judge Rudkin.

Before 1915 the city, instead of the State Railroad Commission, fixed the rates. The gas company obtained an injunction in 1912 against the city rates set that year. Then the company fixed a higher rate itself and collected until 1915, when a Federal court issued an order quashing the injunction. The Pacific Gas & Electric Company appealed. The decision on appeal reaffirmed the quashing of the injunction. The company must now either return the money to the consumers, many of whom are now scattered throughout the country, or appeal to the Federal supreme court.

Asks Higher Rates

Salem, Ore.—New tariffs providing for increases in street railway fares and in gas rates in the city of Astoria has been filed with the Public Service Commission by the Pacific Power & Light Company. The new tariffs become effective on June 30 unless in the meantime suspended by the commission pending an investigation into their reasonableness.

The new street railway tariff increases cash fares from 5 to 7 cents with an increase in the price of fifty-ride books from $2.25 to $3 and an increase from $1.25 to $1.75 in the price of forty-ride students' books.

The new gas rates which are based on a volume basis entirely different from the present schedule and not comparable with the present rates for that reason are as follows:

First 200 cu. ft., $1.25.

Next 4,700 cu. ft., $2.50 per thousand.

Next 15,000 cu. ft., $2.10 per thousand.

Next 30,000 cu. ft., $1.75 per thousand.

Next 50,000 cu. ft., $1.35 per thousand.

Limits Use of Natural Gas as Fuel

Harrisburg, Pa.—The Public Service Commission sustained the right of a natural gas company to make rules and regulations for the economic conservation of the gas supply and restricting its use in favor of the domestic consumer in an order handed down following complaints from the cities of Erie and Corry, the borough of Warren and the Manufacturers Association of Erie, against the Pennsylvania Gas Company.

The commission endorsed all the conservation rules with the exception of one which limits the use of natural gas for domestic and commercial purposes only. The commission ordered an amendment to the rule which provides for a supply to be furnished for industrial users are adequately supplied.

Commissioner John S. Rilling filed a dissenting opinion in which he stated that the company "acted wisely in the line of its public duty," when it adopted the rule cutting off service to the industrial users.

The rules approved, provide for the use of economic gas burning devices, restrict use for domestic purposes only during any period of excessive demand and classified domestic and commercial users for which natural gas will be furnished.

Natural Gas Consumption

Oklahoma City, Okla.—Oklahoma utilities consumed more natural gas in the production of electricity during January and February, 1921, than was used by utilities in any other State in the Union as shown by the most recent report of the United States Geological Survey. Oklahoma consumed 408,287,000 cu. ft. in January and 399,520,000 in February.

West Virginia stood next to Oklahoma with a natural gas consumption for manufacture of electricity of 278,447,000 in January and 263,988,000 in February. Ohio held third place. There was a great falling off in the quantity of natural gas used in Oklahoma for manufacturing electricity in February, 1921, as compared with October, 1920, due probably to the greater demand in winter months for this fuel for domestic purposes lessening the available supply for industrial uses. A similar proportionate reduction was shown throughout the United States, the total of the country for October, 1920, being 2,404,675,000 cu. ft., as against 1,469,418,000 cu. ft. for February, 1921. Oklahoma public utilities produced 17,945,000 kw.-hr. of electricity in February, 1921, of which 255,000 were produced from water-power and the rest by fuels.

Commission Changes

W. R. Williams, secretary of the California Railroad Commission for the past two and one-half years, has resigned and the commission has promoted Col. H. G. Mathewson, for the last ten years assistant secretary of the commission, to the secretaryship. Williams has been made examiner for the commission, and on June 1 succeeded Miss Jeannette Converse in charge of the Los Angeles office.

Approves Mortgage Terms

A supplemental order by the California State Railroad Commission recently approved the terms of a mortgage submitted by the Southern California Gas Company which permits the issuance of $1,500,000 of first and refunding mortgage bonds which were authorized in a previous order. The proceeds of the bond issue are to be used to meet costs of additions and betterments made and to be made to the company's system.

The Southern California Gas Company distributes natural and mixed gas to a number of municipalities in southern California centering around Los Angeles.

Orders Gas Rate Cut

Harrisburg, Pa. — The Public Service Commission, in a decision to which Commissioner John S. Rilling dissents, has sustained complaints from Erie, Corry and Warren against the 60 cents a thousand rate for natural gas charged by the Pennsylvania Gas Company, effective March 16, 1920.

The commission heard the cases last year, and engineering conferences were held and valuations discussed, the investigation being one of the most exhaustive ever conducted in natural gas complaints.

The commission reviews the history of the company and its properties, together with some discussion of the condition of the natural gas supply, and finds the company holdings worth $14,380,000 for purpose of rate making. The company is allowed an annual income of $2,033,600, of which $612,000 is for operating expenses, $140,000 for annual depreciation, $1,006,600 for fair return on investment and $275,000 for annual depletion of gas holdings.

The commission has dismissed the complaint of the Pottsville Union Traction Company against John W. Noble.

Injunction on Lowell Strikers

Lowell, Mass.—Former employees of the Lowell Gas Light Company, who have been on strike several weeks against a wage reduction and an increase in working hours, were made the subject of a sweeping temporary injunction order issued by Judge Louis S. Cox in the Superior Court recently.

The strikers are forbidden to combine or conspire in any way to interfere with the company's business, to annoy or hinder any of the present or future employees of the company in performing their work, or to maintain patrols or pickets in the vicinity of the gas plant. A master has been appointed to hear the facts in the case, and on his report to the court a decision will be made on the question of making the injunction permanent.

Ordered to Return Gas Papers

New York City.—The Mutual Gas Light Company has obtained from Supreme Court Justice Whittaker a writ of certiorari directing F. H. La Guardia, president of the Board of Aldermen, Controller Craig and the Board of Aldermen to return within twenty days to County Clerk Schneider all records and documents submitted by the petitioner to the Board of Aldermen in connection with its protest charging an alleged excessive assessment of $350,000 upon its property in 1921. The city held the valuation of the petitioner's property to be $1,000,000. The petitioner contends that the real value is $670,000.

Hearing Set for July 19

Rutland, Vt.—The gas and electric light rate question in this city is due to be thoroughly threshed out before the Public Service Commission, which has set July 19 for a hearing of the petitioners who demand that the Rutland Railway, Light & Power Company produce the data upon which the concern fixes its rates for these public utilities. It is expected that the hearing will last several days.

The petition is headed by Mayor James C. Dunn and signed by many business men. It was filed with the commission by City Attorney Clayton H. Kinney and Attorney Walter S. Fenton.

Lincoln Gas Company Again Reduces Rate

Lincoln, Neb.—The Lincoln Gas Company has announced a drop in its rates to $1.30 a thousand cubic feet, due to decreases in the price of fuel oil. The rate is now lower than that of Omaha, Des Moines and Sioux City, according to officials of the company. This is the fourth drop this year.

Gas Hearing Date Named

The suit filed by the States of Pennsylvania and Ohio against West Virginia involving the West Virginia law in relation to the sale and distribution of natural gas will be heard by the United States Supreme Court on Oct. 3, it was announced recently.

Gas Meters Are Taxed

The Board of Assessors of Tarrytown believe they have put one over on the Westchester Lighting Company. Recently the company put into effect a service charge of 60 cents a month on all gas meters.

All cities and villages in the county protested, but the order prevailed. The local board then estimated the value of the meters and tacked $15,000 on the company's assessment. It made a protest, but the assessment is likely to stand.

Commercial Section Meeting

Plans have been completed for the meeting of the Commercial Section of the Empire State Gas and Electric Association to be held Friday, June 24, at Cooperstown, N. Y. An interesting program has been prepared, and it is expected there will be a record attendance. It is expected that the sessions will take the greater part of two days. The program is as follows:

"Commercial Department—Functions, Cost and Value, Organization and Methods," W. J. Reagan, Utica Gas & Electric Company.

Lecture—"Industrial Lighting and the Use of a Portable Photometer." Lecturer to be furnished by George H. Stickney, General Electric Company, Harrison, N. J.

"Method of Expressing Differential Rates for Commercial and Industrial Consumers," E. L. Wilder, Rochester Gas & Electric Corporation.

"Meeting the Public in the Commercial Office," A. D. Dudley, Syracuse Lighting Company.

"Selling Appliances to Commercial and Industrial Consumers," S. Smith, N. Y. State Gas & Electric Corporation.

"Progress in the Utilization of Gas in the Past Five Years," N. T. Sellman, Consolidated Gas Company.

"Financing Service Extensions," H. A. Doering, Westchester Lighting Company.

"Handling Consumers' Applications and Orders in Commercial Offices," J. C. Carter, Buffalo General Electric Company.

Preliminary Report — Committee on Rural Lines, Bert H. Shepard, Iroquois Utilities, Inc.

Application Dismissed

On request of the city of Glendale, Cal., the California State Railroad Commission has dismissed that municipality's application to fix a value upon the properties of the Southern California Gas Company in Glendale. The application, which is an old one, is dismissed without prejudice.

The Southern California Gas Company distributes natural and mixed gas in several municipalities and districts adjacent to Los Angeles City in southern California.

Would Review Notes

The Midland Counties Public Service Corporation has asked the California State Railroad Commission for authority to renew $238,600 worth of notes. This utility operates in Fresno, Monterey, San Luis Obispo and Santa Barbara counties.

Increased Rates Allowed

Following a delay of months, the Southern Counties Gas Company has been authorized by the California Railroad Commission to increase its gas rates for the Long Beach-San Pedro district, effective on all meter readings as of July 1 and after. Announcement of this decision on the part of the railroad commission was given out early this month.

The former domestic charge for natural gas distributed by the Southern Counties Gas Company in its Long Beach - San Pedro district started at 90 cents per thousand for the first 2,000 ft., followed by a sliding scale which made the fuel less expensive as the amount consumed increased. By the ruling of the newly received decision, this charge is increased to $1 for the first thousand cubic feet of gas, with a sliding scale downward.

The increase practically figures on the basis of a 12 per cent increase for the gas company. In its petition to the State body the company had asked that 10 per cent on the investment be allowed in the new rate. After due consideration on the part of railroad commission engineers and representatives, 9½ per cent on the investment was allowed.

The high cost of money and the hazard of operation were cited by the applicant in its plea for higher rates. The 10 per cent return on the investment was asked by the company, said the petition, in order to induce the investment of additional capital for financing improvements to its system, the estimate cost of which would amount to $325,000, in the Long Beach-San Pedro district during the year ending Aug. 1, 1921. In view of the existing circumstances, read the decision, and the low relative cost of service and the present cost of money, it appears reasonable to grant a 9½ per cent return to the applicant.

The company showed that at the time of purchase of the Long Beach properties, in 1916, the average investment per consumer amounted to $62.90, while since then over $1,025,000 has been expended and the unit investment has increased to more than $125 per consumer. The commission determined the quantity of gas needed for the Long Beach-San Pedro district for the year ending June 30, 1921, after studying the growth of the community and the average unit consumption. It estimated the domestic sales to be 847,000,000 cu. ft. and total gas requirements with industrial sales to be 1,462,532,000 cu. ft.

The new domestic rates as set forth in the recently received schedules are as follows:

First 1,000 cu. ft. or less per meter per month, $1; next 4,000 cu. ft. per meter per month, 90 cents per thousand; next 10,000 cu. ft. per meter per month, 80 cents; next 35,000 cu. ft. per meter per month, 70 cents; all over 50,000 cu. ft. per meter per month, 60 cents.

Would Continue Dollar Rate

St. Paul, Minn.—Continuation of the dollar gas rate in St. Paul for another six months or longer was asked by the St. Paul Gas Light Company in a petition filed with the City Council May 26.

The agreement reached by the city and the gas company, under which the gas company is guaranteed a dollar per thousand cubic feet for gas, expires June 15, and unless the agreement is extended the rate will revert to 85 cents.

The additional 15 cents granted the gas company in December was allowed with the understanding that this amount should be paid by the gas company to the Minnesota By-products Coke Company, which furnishes the gas.

With the additional revenue, the actual loss of the By-products company during the first four months of the year has been $169,990, and the earnings of the gas company have been the lowest in its history, except in 1917, according to the petition.

It is also asserted in the petition that the coke company made the book value of coal $8 per ton in its inventory Dec. 31, when in reality the actual price paid was a fraction more than $10. This brings the total loss for the first four months of this year to $242,927.10, the petition says.

The coke company in a letter to the gas company says, in part, as follows:

"As pointed out to you in our various communications last year, it is obvious that the coke company cannot go on indefinitely furnishing gas at an actual out-of-pocket cost substantially in excess of what is received."

The council referred the petition to Commissioner McDonald for investigation and report.